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ABSTRACT

This report of the congressional hearings regarding the future United States population focuses on the need for various levels of government (Federal, State and local) to anticipate population change and to develop appropriate policy responses. Specific areas covered by the hearings include the impact population changes will have on the needs of youth and on employment policies. The fiscal implications of the U.S. population's changing age structure is also considered. An appendix includes prepared statements and additional related material submitted to the committee. Additional topics addressed include the future of the American family, population shifts and regional trends, population changes in New York State, fertility and migration, and the effects of population growth on economic conditions. (EB)

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CONSEQUENCES OF CHANGING U.S. POPULATION:
Baby Boom and Bust

HEARINGS
BEFORE THE
SELECT COMMITTEE ON POPULATION
U.S. HOUSE OF REPRESENTATIVES
NINETY-FIFTH CONGRESS
SECOND SESSION

MAY 23, 25 AND JUNE 1, 2, 1978

[No. 10]

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FUTURE U.S. POPULATION AND ITS IMPLICATIONS

TUESDAY, MAY 23, 1978

U.S. House of Representatives,
Select Committee on Population,
Washington, D.C.

The task force met, pursuant to notice, at 9:30 a.m. in room 210, Cannon House Office Building, Hon. Daniel K. Akaka and Hon. Dave Stockman, cochairmen, presiding.

Members in attendance: Mr. Akaka, Mr. Stockman, Mr. Scheuer, Mr. Beilenson, and Mr. Erlenborn.

Present: Dr. Bouvier, professional consultant; Dr. Williams, task force director; Ms. Par[illegible], special assistant; Ms. James, research assistant; Ms. Stolp, research assistant; Dr. Vinovskis, assistant staff director, and Mr. Lie[illegible]man, intern.

Mr. Akaka. The hearing on "The Consequences of Changing U.S. Population" will come to order. I would like to welcome all of you here today and thank you for your interest and your participation.

I am especially honored to share with my colleague, Dave Stockman, the chairmanship of this task force. We will cover many significant issues in the coming weeks. I am confident that the upcoming hearings will help us to focus on the need for various levels of government to anticipate population change and to develop appropriate policy responses.

I have a very personal interest in the topics we will be discussing. My home State of Hawaii has recognized that it is an obligation of governments to analyze the current problems and the prospect of future difficulties imposed by changes in the population. Legislative actions addressing growth management are now underway to facilitate the adjustment of Hawaii's rapidly rising population to maintain decent levels of economic and social well being.

The Federal, State, and local governments must make an assessment of population-related problems and deal with them through appropriate policies. Demographic discontinuities, when unanticipated, cause serious disruption in all sectors of society. The great failure of the past is that policymakers have not recognized, until it was too late, that these discontinuities directly contribute to the problems currently at hand.

The baby boom and bust have required, and will continue to require, large changes in most government programs and policies. In addition, those programs and policies must respond to the shifting geographical distribution of the population, as needs in different areas change.

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I believe the testimony we will receive today and during subsequent weeks will heighten our awareness of the impact of demographic change, thus enabling us and future Congresses to cope more effectively with the problems arising from population change.

We are, I repeat, happy to have you here this morning. Our chairman of the Select Committee on Population will be coming shortly and also has a statement to make.

At this time, before we call on our witnesses, I'd like to call on Mr. Stockman for a statement.

OPENING STATEMENT OF DAVE STOCKMAN

Mr. Stockman. Thank you, Mr. Chairman. It is indeed a privilege for me to co-chair these 8 days of hearings on the consequences of domestic population change. I welcome each of you at the witness table today—this first day which will present an overview of current and future population trends.

Today's hearings will lay the groundwork for the next 3 weeks in the sense of providing us with the basic information on the changes that are occurring in our popluation.

The subsequent days of hearings will focus on the major policies which will be affected by these demographic changes. In particular, we will look at the impact of the baby boom and the baby bust on a number of social institutions.

We have already experienced the impact of the baby boom cohort on the educational system with rapidly enlarging school enrollments during the 1960's. With the onset of the baby bust, we must now cope with an entirely different set of problems. What to do with the excess school facilities and educational personnel, now that enrollments are dropping, is one example of the kind of discontinuities that we face.

The baby boom has made its presence felt in other ways as well. Recently, our Nation faced the highest unemployment rates since the depression, in part, due to this giant generation's entrance into the labor force during the 1970's.

Because of the baby boom's unique relative size, the Nation is likely to encounter successive social and economic strains and adjustments as this generation matures. It will be incumbent on the Government to develop policies to minimize the distruptions which are likely to ensue.

In these hearings, we will also look at the consequences of geographical relocation of the population with particular attention to the problems associated with areas experiencing population growth and those now experiencing population growth and those now experiencing population loss.

These are issues of keen interest to every member of the Congress whether we represent an area experiencing rapid growth, like Daniel Akaka's district in Hawaii, or population decline, such as that being experienced by the district of our distinguished chairman from New York, Mr. Scheuer.

Finally, we will explore the capacity of the Federal Government to plan for population change and its consequences. On that day, we will consider whether the present institutional arrangements of our Government facilitate planning for long-term problems associated with population change.

We are all eager to hear from the panel of expert witnesses and accomplished people in these fields that we have here today. I yield the floor back to the chairman so that we can proceed with the panel.

Mr. **Akaka**. Thank you very much, Mr. Stockman. Since we would like to expedite the hearing today, we will ask the witnesses to highlight their testimony in about 5 to 10 minutes.

At this time, I call on the leadoff witness, Mr. Plotkin, Director of the Census Bureau. He is accompained by Mr. Levine and Mr. Zitter.

Your testimony will be included in total in our record, Mr. Plotkin. Please proceed.

STATEMENT OF MANUEL D. PLOTKIN, DIRECTOR, BUREAU OF THE CENSUS

[Prepared Statement in Appendix on p. 273.]

Mr. **Plotkin**. Thank you, Mr. Akaka. I am pleased to have this opportunity to discuss with this committee the projected growth of the U.S. population.

With me are Mr. Daniel Levine, the associate director for demographic fields in the Census Bureau, and Mr. Meyer Zitter, who is chief of the population division, and working with us is John Long, chief of the population projections branch of the Census Bureau.

As I noted in my prepared statement, the Census Bureau has no crystal ball for projecting the population of the United States. The projections that we have published are only the mathematical outcome of the assumptions of the future course of fertility, mortality, and net immigration rates.

Although the assumptions we used in these projections as outlined in my prepared testimony are reasonable, it is possible and, as a matter of fact, virtually certain, that the future course of the population trends will not follow our projected patterns exactly.

Yet, the projections can serve as a useful guide for informed planning for the next 50 years. The coming half century should be most unusual in terms of population change and a very challenging period for those charged with planning for the social needs of particular age groups in the U.S. population.

It will be a period of boom and bust for age-related institutions—schools and colleges, housing, retirement, pension plans, and even the undertaking business. As the baby boom generation pursues its course through the age structure of the U.S. population, it will be a period in which zero population growth and even population decline could very well become a reality, or in which fertility rates could rise, resulting in births equivalent to the number born during the post-war baby boom.

It will be a period in which mortality rates for the middle and older ages may decline only gradually or continue their unprecedented decline of the past few years. In the latter case, the total projected population would increase only slightly, but the proportion of the population over 65, would significantly increase even above the record high ratio currently projected.

It will be a period in which international migration will play an important role in the U.S. growth rate if the rate of natural increase remains at the current historical low. Yet the size and even the direction of the net immigration component remains somewhat uncertain with the current lack of data on legal migration to and from the United States. We have only statistical speculation about the volume of illegal immigration.

What specifically can we say about the future size, growth rate, and age and sex composition of the U.S. population between now and 2025? There are three different series of projections made by the Census Bureau. The high series assumes fertility will rise gradually from its current range of 1.7 or 1.8 births per woman up to 2.7 births per woman by 2015, an average increase of one child per woman. The middle series assumes a slight rise to 2.1 births per woman, the level at which the population would eventually reach zero population growth in the absence of immigration. The low series assumes that fertility will eventually stabilize close to the present level at 1.7 births per woman by 2015.

With this background, let me describe for you some of the highlights in population growth as we project it for the next 50 years. Under all of the series, the U.S. population will grow between now and the year 2000, but after that totals will vary widely.

Under the middle series, the current U.S. population of 218 million, including Armed Forces overseas, would increase to 260 million by the year 2000 and to 296 million by the year 2025. That is illustrated on our chart 1.

[Additional materials in appendix with prepared statement.]

Mr. **Plotkin**. Under the high series, population would increase much more rapidly to 283 million by the year 2000 and to 373 million in the year 2025. Under the low series, it would rise only to 246 million by the year 2000 and to 252 million by the year 2025 at which point the U.S. population would actually start declining.

The annual growth rate of the U.S. population for the past 5 years has been about 0.8 percent a year. Both the middle and low series of projections show a decline in that rate of growth. The middle series shows population growing at an annual rate of 0.9 percent a year for the next few years, but then growing more and more slowly so that the growth rate in the year 2000 would be 0.6 percent and by the year 2025 would be only 0.4 percent.

The most significant turnaround in growth rates is shown by the low series which projects a decline in the growth rates from about 0.6 or 0.7 percent in the next decade down to 0.3 percent by the year 2000, reaching zero population growth by the year 2020 and then going to a negative population growth of 0.1 percent by 2025.

Thus, even with net immigration of 400,000 a year, the United States in the next 50 years could reach zero population growth and then decline, assuming a fertility rate that is close to present levels. Of course, there is also the possibility that fertility rates could rise up to the level projected by our high series, in which case the population growth rate would vary between 1 and 1.3 percent a year from now until the year 2025.

These growth rates are a result of the changing relationship between the number of births and deaths in the coming years. Although the current annual number of deaths, under 2 million, is considerably less than the more than 3 million births, the number of deaths is expected to rise markedly over the next few decades as the number of older persons in the population increases. This rise in deaths to 2.5 million in the year 2000 and almost 3.5 million by the year 2025 is greater than the expected rise in the number of births in the low series and almost as great as the rise in the number of births in the medium series. Only under our highest assumption for fertility does the number of births increase faster than the number of deaths.

As you can see, rather small changes in fertility rates can make major differences in the growth rate for which we have to plan. Fortunately, we have somewhat more stability in our projections of changing age structure. In fact, the knowledge of the current age and sex distribution and the aging process is one of the best tools demographers have for projections.

The simple arithmetic of the aging process goes a long way toward assisting us in projecting population. Although the populations of the younger age groups are projected to be somewhat larger under the high series and somewhat smaller under the low series, we can discuss the age structure generally in terms of the middle series.

During the next several decades, the major demographic factor will continue to be the aging of the baby boom population. The people born during the peak of that boom—the late 1950's and early 1960's—will continue to be the largest population group throughout most of their lives.

As this large group passes through each of these ages, the institutions that deal with population of particular ages will undergo the strain of rapid expansion and a decade or two later, the often more painful task of precipitous retrenchment. We have already seen the process in our elementary schools. The Nation's secondary schools have seen the expansion and are beginning to feel the effects of contractions. A similar process is underway in the Nation's colleges. There is also an impact on the housing industry, the entry level job market, and other economic activities that focus on people in their twenties. In a few years this boom-bust cycle will inevitably touch those institutions which are geared to the middle-age and older population as well.

I have prepared a set of charts that show exactly how the age-sex structure will change. I'm not sure you can see the details from the front, but we will try to point out the highlights of the changes.

As of July 1, 1977, which is the latest date this chart refers to, a graph of the population by age and sex shows the typical pyramid shape except for the bulge due to the baby boom population in the 15 to 19 and 20 to 24 year age groups and the smaller population of younger age groups. By the year 2000 the bulge will have risen to the 35 to 44 age groups and will have an echo effect on the large number of youths, age 10 to 19, who will be born in the next decade as a result of the unprecedented number of baby boom generation women in the childbearing ages. Even with constant low fertility rates per woman, the total number of births will rise due to the larger number of women between ages 15 and 45.

For the next century, projections for age-sex structure are more tenuous since future fertility will have a major effect. Even so, we do know that the baby boom generation born in the late 1940's through the early 1960's will increase the number of persons 65 and over to an all-time high. From 24 million today, the number is likely to increase to 32 million by the year 2000 and over 50 million by the year 2025, more than double the number today. Under our middle series of projections, the percentage of population over 65 will remain at about 11 or 12 percent of the population through the end of this century, but then will jump to 17 percent by the year 2025.

I hope I have shown that even if we do not know the exact details of the population change in the next 50 years, that we do have sufficient information about general trends to aid those responsible for planning and policy formulation. In many respects the next few decades will be unlike any previous period in the Nation's history. The projected population and trends for this period may at least provide a glimpse of the problems that will arise in the next half century.

Mr. Akaka, my associates and I will be pleased to attempt to answer any questions that you or any members of the Select Committee on Population may have.

QUESTIONS AND REMARKS

Mr. **Akaka**. Thank you very much, Mr. Plotkin. Let me ask a hypothetical question. If the Census Bureau were to receive a budget increase of $5 million to be devoted solely to population research, how would you channel that money? Into fertility, mortality, internal migration, or international migration research?

Mr. **Plotkin**. Mr. Akaka, in response to that question, I should first point out that the most important base for future population research is a high quality census in 1980. As you well know, we are developing and spending much of our time in planning the best possible census for 1980, and we are devoting a good deal of the Census Bureau resources and energies to that endeavor.

To make effective use of the large sum of money that you just mentioned, the $5 million, we would see possibilities of working with agencies in virtually all the areas you have mentioned. Certainly expanding a program on immigration statistics and some effort to improve the statistics on out-migration would be in order. There are data approaches that might be applied to that area. We feel more work can and should be done in mortality research and certainly in fertility research which is such a large variable and is so important in any work on population projections.

Finally, we also see the need to study the use of census data from all of the countries of the world in order to measure international population movements. So we see opportunities for worthwhile research in all of these areas.

Mr. **Stockman**. Thank you, Mr. Plotkin. Mr. Akaka has a bill on the floor that may affect the population of Hawaii. [Laughter.]

But, I will proceed. I have one question that I would like to pursue. I think you have done an excellent job of presenting some of the basic parameters that we have to have in mind both in terms of the aggregate population and its age composition in particular. I am wondering whether you have done, or whether it would be possible for the Bureau to do, what I would call some policy related correlates of these three population series that you project. Let me be a little more specific. Under the low series, for instance, could you give us a tracking of the school age population over the next 50 years and then do the same under the middle and the high series?

Similarly, one tracking that would be very important to us, I think and to the whole Congress, especially as we face the social security question again next year, would be the retirement and employment ratio that would correlate to the three population series that you project as a result of the assumptions you use.

Another, obviously, would be an age structure based specifically on each of the three cases that you developed. Have you done some of this kind of work, could it be done and submitted to the committee, or would it require more resources, time, and so forth than you possibly could put in?

Mr. PLOTKIN. Mr. Stockman, we have done most of this work, but it would have to be updated. We certainly can supply the data you request.

Mr. STOCKMAN. I would like to submit a more detailed request in terms of the specific variables that we will take a look at.

[Material requested with additional questions on p. 48.]

Mr. PLOTKIN. That would be very helpful.

Mr. STOCKMAN. It seems to me that in the aggregate these figures give you some notion of the general possibilities. But in terms of their relevance to the specific policy areas that we have to look at, whether it is health care financing, or retirement financing, or the educational resource needs of the future decade, I think it would be very helpful to us if these figures could be translated into specific series affecting those policy domains.

Let me ask another question. Do you make any effort to assign probabilities, let's say, to each of the three series that you project, or are these numbers merely mathematical calculations that are based on a set of assumptions that are grouped together in three different paths?

Mr. PLOTKIN. We do not assign any probabilities. These are assumptions of the most likely alternatives in our judgment, and we don't rank any probabilities. In truth we really don't know how to rank probabilities in this area, other than through a judgmental method and this might be misconstrued.

Mr. STOCKMAN. I understand that. Obviously, in terms of the integrity of your institution and so forth, you want to be known as a statistics gathering and collating agency, not one that is in the business of prediction or forecasting or even making specific policy recommendations.

Mr. PLOTKIN. We like to think of ourselves as the factfinder of the Nation.

Mr. STOCKMAN. Right, but nevertheless, when you get to your projections for the year 2025, there is a population difference for the three estimates of over 100 million people. That is rather significant, and it has obvious implications for the policy decisions that we will be making every year between now and then. Therefore, one really does need to know whether he ought to assume that it is going to be 373 million or closer to that higher range, or 252 million, the low end.

If this is something that can't be provided or even taken a stab at by the Census Bureau, where would one go to come to some close conclusion about these numbers?

Mr. Plotkin. As you pointed out, it is a judgmental decision. In my private industry experience, when developing forecasts of various kinds which were based on population, we looked very carefully at the Census Bureau series and often selected not one of the three, but often selected an average of the two that we thought in our judgment were the most likely to occur.

Again, we try to present the assumptions on which the projections are based and all of the information which might support these assumptions, but we ask that the final judgment in terms of which forecast to follow, be made by the policy people involved.

Mr. Stockman. I want to ask you one more question. Each of the projections is based on a set of assumptions regarding fertility, mortality, and immigration. How would you arrange the importance of those assumptions? Obviously, they are not of equal weight. How would you rank them in terms of importance if one were to sit down with the three series and try to decide which is the most likely trend for the future? Would you put fertility first? How much weight would you put on immigration, and so forth?

Mr. Plotkin. We would certainly put fertility first. I would like to have Mr. Daniel Levine who is the associate director of demographic fields answer that question more fully.

Mr. Levine. Mr. Stockman, that is a very difficult question because you are trying to peer into a crystal ball, and that crystal ball can turn itself upside down in a very short period of time. If Congress, for example, notwithstanding the fact that we were to tell you today that we believe fertility would be the most important factor, were to change the immigration statutes in the United States and we had a wholesale movement of population caused either by immigration or emigration, the picture would change over night.

Similarly, if the behavior of the American female were to change with regard to either birth rate or fertility rate changes, or if there were some radical discovery with regard to mortality, this ranking would again change radically. It is very difficult to assign priority; but as we have shown, fertility, at least in our assumption, is the most important criteria, and in terms of making the decision, one has to decide on the basis of discussions, of the types of testimony you have heard today, the types of testimony that I am sure you are going to hear in the next week, what appears to be the most logical assumption and make a judgment accordingly.

Mr. Stockman. Well, what do you think is the most logical assumption about fertility?

Mr. Levine. Well, that is a personal viewpoint, not the viewpoint of the Bureau of Census.

Mr. Stockman. Right.

Mr. Levine. My view is probably somewhere between the middle series and the low series. I think the low is too low; I think the middle is probably just about right, but it would probably be a little bit below the middle series.

Mr. Stockman. Could you elaborate on why you would——

Mr. **Levine**. No; I really can't. It is just based on the experience of today that I see and that I have seen. I just don't think that fertility is going to rise dramatically.

Mr. **Stockman**. Let me ask you this. We have seen enormous swings in fertility in the past and, of course, that is one of the reasons why you need to be, I suppose, as cautious as you tend to be on this issue, because who is to say such a radical swing couldn't occur in the future. Nevertheless, we can analyze the past to see whether we can find factors that account for those wide fluctuations and then ask the question: Are they likely to be replicated again in the future?

As you analyze the fluctuation, say from the 1920's to 1965, you see that we had a very low rate during the 1930's and then the curve steeply ascended until about 1960. What do you attribute that wide fluctuation to and is it something that is likely to be repeated?

Mr. **Levine**. I attribute it, of course, to the fact that there was a rather extreme war situation, followed by a rapid rise in personal income and things of that sort. I believe you will find that, historically, the fertility rate in the United States, with the exception of occasional so-called abberations, has dropped fairly steadily. My own thinking is, as you suggest, that the rate is not going to continue to drop as precipitously as it has recently. I think it is going to start leveling off. That is just my personal view, Mr. Stockman.

Mr. **Plotkin**. One of the most unpredictable areas, of course, is the economy. The depression had a very significant impact on the birth rate. There is considerable speculation about our present economy as it relates to what the growth rate will be. That is certainly a factor that would have to be considered in any judgment about future population rates.

Mr. **Stockman**. So, you think that there may be some correlation of population growth with the rate of economic growth or economic performance.

Mr. **Plotkin**. Yes.

Mr. **Stockman**. We have a quorum call on the floor so we are going to have to recess temporarily, but as soon as we all go over and answer we'll be back. If you would be kind enough to wait, I will proceed with Mr. Erlenborn. Thank you.

[Short recess taken.]

Mr. **Erlenborn**. The committee hearing will resume. Mr. Plotkin, you have a new chairman now, the third this morning. The other members have reasons to be temporarily absent from the committee hearings but will return.

Let me welcome you as a fellow Illinoisan to this committee. I am pleased to have your testimony. I only have one or two questions. I notice that in your projections you had three varying assumptions as to fertility, but apparently a constant assumption about net inmigration. Can you tell us why you use that constant assumption of 400,000?

Mr. **Plotkin**. We have used constant assumptions in immigration and mortality because those are more stable series. Generally, these factors have less impact on the total population projections, so we thought we were justified in using one series for those variables but felt that for fertility, because of the high volatility of that series in past years, that it would be best to use the three assumptions.

Mr. **Erlenborn**. Can you tell us what the Census Bureau has found the historic level of migration to be over the last 10 years or 20 years? I preface that question by saying that we are quite aware that counting illegal aliens is a very difficult task. Maybe you could tell us how successful you think you are, if at all, in counting them in the census?

Mr. **Plotkin**. I would like to ask Mr. Zitter who is chief of our population division to address that question, Mr. Erlenborn.

Mr. **Zitter**. Thank you. Immigration for the past 10 or 20 years, and even longer, has been running between 300,000 and 400,000 a year. That is the main reason we chose that level.

With regard to illegal immigration, we hardly know anything about it in terms of the absolute numbers. There has been a lot of speculation as to what the level might be, but we have no way of arriving at a figure which we feel comfortable with. Now, we don't specifically exclude illegal aliens from our census count or from our estimates, and there is a very good possibility that many are included.

Mr. **Erlenborn**. The 300,000 or 400,000 figures that you mentioned as fairly constant over the years, that is legal migration isn't it?

Mr. **Zitter**. Yes. That counts legal migration, and also includes the net arrival of citizens returning from abroad who have been living abroad for a number of years.

Mr. **Erlenborn**. You say you don't feel comfortable making any estimate on the number of illegal aliens even for just illustrative purposes. Do you have any ballpark figure?

Mr. **Zitter**. Well, no. From what I have been reading, I just don't feel that the techniques that have been used provide any reliable data at all. I don't feel that I have any basis even to speculate on what projections might look like, so I have avoided incorporating any such set in our projections.

Mr. **Plotkin**. Mr. Erlenborn, as you know, there are estimates made by others on the number of illegal immigrants, and they range all over the park. We have some concern that any series cited by the Census Bureau would be endorsed as a sound, statistically valid, series. We have found no sound basis for making any estimate.

Mr. **Erlenborn**. Is one of the problems the fact that illegal aliens tend to flow back and forth—in and out of the country? We have heard testimony from other witnesses to that effect, and this is probably a characteristic that would not be observed in the resident legal population. Is that one of the reasons?

Mr. **Plotkin**. That is certainly one of the problems; the issue of aliens going back and forth is certainly a critical one. One other problem area, of course, is that of identifying a person as a legal or an illegal alien. In the census, we attempt to count everyone. However, we cannot for obvious reasons ask a question about whether a person is a legal or an illegal alien. We do ask a citizenship question, but we don't ask a question on legal status.

We do know that we include in our count a number of illegal aliens, but we have no idea what that number is.

Mr. **Erlenborn**. We've had testimony about the change in the question on the census questionnaire relating to the place of birth of parents of the respondent to the questionnaire. Could you explain to us why this question has been dropped and another, which many think is less revealing and less helpful, has been substituted?

Mr. **Plotkin**. In the 1970 census we asked place of birth of one's parents, and that question has been dropped in favor of a question on ancestry.

The broader question has been introduced as a result of the interests of many groups who have indicated, very strongly, to the Bureau their need to identify the number of people by ancestry. We have met with a number of groups from the Polish community, the Italian community, and others who have felt that just identifying first and second generation Americans was not adequate and that that approach, in effect, under-counted the number of their people who are contributing to this country. In response to these expressed concerns which we felt were valid, and to the great interest in that question, we broadened the question to include national origin or ancestry.

Mr. **Erlenborn**. I should think that for many of us, myself included, it would be very difficult to answer that question. On St. Patrick's Day, I would probably think about my Irish ancestry, and other times I would think of my Alsatian ancestry. I would then say that the latter was either German or French depending on who was successful in the latest war and the period of history you are talking about.

Mr. **Plotkin**. Yes.

Mr. **Erlenborn**. But, I often think of my Norwegian ancestry. I don't really know how I would answer that question, having a list as long as the number of colleges I attended. [Laughter.]

Mr. **Plotkin**. You have highlighted one of the difficulties of that question, and that is why we leave it for self-enumeration. We let the person make the identification as he/she wishes to. We have experimented with questions on mixed ancestry and, of course, as you can appreciate, that can get to be quite burdensome and complex. We felt that this question, which lets the person identify his ancestory, is the best alternative.

We have experimented with this in several of our test cities and it does appear to have given us fairly usable results. Mr. Levine would you want to comment on that?

Mr. **Levine**. I would only support what the director has said, Mr. Erlenborn. There is great concern among many groups that the first and second generation information would be inadequate because large in-migration flows have been curtailed, and there are now third, fourth, and fifth generation descendants here. To get an identity from those groups using only parent's place of birth would not provide any information beyond, as we have said, recent immigrants.

As the director pointed out, this is a self-determination question. It does permit the respondent to decide whether he or she wishes to report mixtures, and we will code mixtures when it is appropriate. It allows the individual to indicate what is the strongest cultural tie that he/she has in terms of ancestry. The instructions that we will provide with our questionnaire will, we hope, clarify the issue and explain to the respondent the types of information that are needed.

We recognize that there is some softness in this approach, but in terms of the various needs that have been expressed, the laws that have been passed, and the interest at this point in our history in terms of identifying discrete ethnic origins, we find that this is the only question that we have been able to develop which will provide us with types of information that have been requested.

Mr. ERLENBORN. One last question, to what extent—yes, Congressman Scheuer.

Mr. SCHEUER. We have heard from other demographic professionals criticizing this change of yours, and they feel that the question about the place of birth of your parents is a very valuable research resource. There is virtual unanimity among professionals that the loss of this information will hinder their research effort. What I don't understand is why you want to substitute a subjective question for a question that gave us some very hard answers that involved facts, not perceptions. Doesn't the whole question of self-identity simply reflect strong cultural ties and that only? Wouldn't the Germans, for example, be less likely to say German than the Polish or Italians would say Polish or Italian? It seems to me that you are just getting into congeries of emotionalism and that your answers are going to be so soft as to be virtually meaningless. All it is going too mean is that the answers will often reflect only what people would like to perceive themselves as being. The consensus of the professionals in the demographic community is that the responses will be very murky and fuzzy, that no scientist, except a social scientist who is interested in how people perceive themselves, could use the results of this question. We are giving up some very hard evidence as to whether the foreign-born group is enlarging or whether it is diminishing or whether they are coming and shortly afterward returning to their homelands or staying.

Mr. LEVINE. I think you have raised quite a number of questions, Mr. Scheuer. I would say, frankly, that in our context there are differences of opinion. I don't believe that I would agree that there is unanimity among the demographic profession that this information will not be useful.

I think also that the fact that we do know that immigration is at a relatively low level, and that many of the types of people who you mentioned—Germans, Scandanavians, and others—are not migrating here in large flows at the moment, means that asking a question about the birth place of parents would not provide much useful information. It would be quite feasible to assume that many, many people identify with their foreign ancestry, but that third, fourth, and subsequent generations would not have parents born overseas, but would have parents born in the United States. The only way one could pursue that would be a horrendous series of questions going back to where the mother and father were born, where the grandmother and grandfather on each side were born, and so on.

Mr. SCHEUER. Excuse me, we have had testimony to the fact that we have anywhere from two to 12 million illegal aliens in addition to the legal aliens. Now, we are not going to ask them on a census if they are legal or illegal immigrants, but, if we ask them where their parents were born, at least we would have a much clearer idea of the number of people of foreign origins that are here. At least we would know much more about these new immigrants than we do now. Forgetting their legality or illegality, we'd know where they are coming from and how many there are.

Mr. LEVINE. I think, again there are two points to that. First, to the extent that they are covered in the census, we do have the place of birth of these people who are illegal immigrants. Again, if they answer honestly, we have the place of birth of the individual.

What we are talking about now is place of birth of parents. The illegal migrants, I assume, have been born elsewhere than in the United States and to the extent that they are covered in the census we will have their place of birth. I can not tell you, and I don't think anyone can, that we will cover all of the illegal migrants, or part of them, or the majority of them, nor can I tell you what they will answer to the census question.

I can only tell you that we will cover some of those people because when we knock at a door and someone answers, if they are here illegally there is no way that they can indicate that they don't exist.

With regard to the other populations, which are the ones that are raising serious questions because we happen to be at the point in the decade when there is very high interest among other ethnic groups in terms of their identification, we felt that the question we are asking is the only one which would provide the types of information which might be useful to these groups.

We cannot guarantee their use of the question. I agree, it is a soft item, and there will be people who will indicate that they are American, although I will say at this point in the decade, more people, to use the colloquialism, have come "out of the closet" regarding their ethnic heritage than perhaps was true 10 or 20 years ago.

With regard to your question on place of birth of parents, we have indicated that in order to provide information which will tie the decades together, we will conduct a national survey close to the census date where on a national level, not for the small area detail which we get in the census, we will ask questions on place of birth of parents. So, we will have a bridge in terms of national data relative to this series of questions.

Mr. PLOTKIN. As you observed, Congressman, there has been increasingly great interest in national origin and ethnic background. We have heard and been with many groups—many national origin groups—and discussed this question with them. As a matter of fact, we are not completely satisfying them. In fact, some are quite unhappy that we don't have a complete listing of all possible countries of national origin. We have experimented with this, and we have found that such a listing would add too many complications to the questionnaire.

We plan to include the question on ancestry which we feel would satisfy the greatest need. Also, we are trying to maintain some historical continuity of place of birth of one's parents by the use of this question in the large survey that Mr. Levine referred to.

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Mr. **Scheuer**. I have had a number of constituents in New York City who come from Latvia, Estonia, and Lithuania who are absolutely outraged and incensed that they have to be registered as Russians, or give the answer that their place of birth was Russia. Doesn't that have to do with the census?

Mr. **Plotkin**. That must be something else because this is an open-end question, and they can certainly indicate Latvia or whatever country they wish.

Mr. **Scheuer**. I may be confused. Mr. Levine, do you know what I am talking about? Do you know what their complaint is in reference to? Is it when they apply for a passport or something of the kind?

Mr. **Levine**. In some earlier versions of questionnaires that we were developing for 1980 and for some other questionnaires, there was concern expressed about use of the heading of Russian as it subsumed the headings of Ukranian, Latvian, Lithuanian, and other local origins.

Mr. **Scheuer**. Yes.

Mr. **Levine**. In answer and in recognition of the concerns of the sort as the director has indicated, we now have a question which basically says: You write in your ancestry and we will code it appropriately. Thus, we no longer subsume any group—against their will—under any major heading.

Mr. **Scheuer**. Have some ethnic groups pressured you to include this ancestry question, regardless of its quality? Has there been any pressure from the White House urging you to ask this question on perceptions of ethnicity and national origin?

Mr. **Plotkin**. There has been no pressure from the White House other than that there has been an interest in our meeting with various groups and our hearing them out, and of course this is the policy of the Census Bureau. We meet with whatever groups want to meet with us to state their interest.

Although we get a large amount of pressure, the Census Bureau does try to make a decision consulting with the professionals as to what the best questions that should be included are.

Mr. **Scheuer**. Thank you, Mr. Erlenborn.

Mr. **Erlenborn**. Mr. Beilenson?

Mr. **Beilenson**. Thank you, Mr. Chairman, but I do not have any questions at this point.

Mr. **Erlenborn**. I have one last question, Mr. Plotkin. One of the things that this committee is going to be looking at is the extent to which Federal agencies are looking ahead to anticipate what changes in population there will be and what problems those changes might indicate. From your standpoint, what sort of information regarding the future population and migration within the United States is of special interest to the various Federal agencies, as they plan and provide for the anticipated changes?

Mr. **Plotkin**. There is a great deal of interest, Mr. Erlenborn. There are many agencies of the Federal Government that employ Census Bureau projections of population. Specifically, our projections of long-range demographic trends are the basis of the projections of the labor force by the Bureau of Labor Statistics. They are the basis of school enrollment figures for the National Center for Educational Statistics, of the number of annuitants by the Social

Security Administration, and of energy consumption by the Department of Energy, just to mention a few. I know that the uses of these projections are widespread in and out of the Government.

Mr. **Erlenborn**. I said that that was going to be a last question, but I thought of one more. [Laughter.]

I noticed in my area, which is one you are probably familiar with, Du Page County in the western suburbs outside of Chicago, that over the course of the years, the utilities have made their own projections as to population growth in that area in order to anticipate what they must do to be able to provide the utility service. Do you have any feel for the relative success of the Census Bureau versus these utility companies in projecting or guessing what the population may be in the future?

Mr. **Plotkin**. I think you will find that in most cases where local projections are made, the researcher starts with the Census Bureau long-range projections of demographic trends. I did that as a researcher in industry, and I know the utility companies do that also. After taking a look at long-range national demographic trends, the conventional technique is to study one's local area to determine the differences in growth in that local area from those expected in the national projections.

On the whole, I find that many local areas do a good job in preparing local projections. We are not in the business of developing projections for local areas, and if we were to try to do that, it would require considerable resources and duplication of information that is already available in local areas.

Mr. **Erlenborn**. Thank you very much for your appearance here today. If you would like to remain to hear the other testimony, you may, but if you have other important things to do, we will certainly understand. Thank you.

Mr. **Plotkin**. Thank you, Mr. Chairman.

Mr. **Levine**. Thank you, Mr. Chairman.

[Witnesses excused.]

Mr. **Erlenborn**. Next, we will have a panel of witnesses. Dr. Glick, Dr. Morrison, Mr. Barabba, and Dr. Espenshade.

STATEMENT OF PAUL C. GLICK, SENIOR DEMOGRAPHER, BUREAU OF THE CENSUS

[Prepared Statement in Appendix on p. 287.]

Mr. **Glick**. Mr. Chairman and members of the committee, the title of this presentation is "The Future of the American Family." That is a big order. More specifically, I have been asked to speak on the Census Bureau's research concerning changing patterns of fertility, marriage, and divorce.

Stated in the fewest words, I interpret this research to suggest that further changes in these aspects of American family life will be significantly less pronounced during the next two decades than they have been during the last two decades.

The Bureau's projections of the rates of population, school enrollment, and labor force growth consistently have shown slower increases for future years than for recent decades. Slowdowns in these respects should be reflected in the future course of family life.

Population growth should slacken because the birthrate has gone about as low as it can go, and most demographers do not expect it to rise very significantly in the next decade or two. Something that deserves more attention in this connection is the expanding use of sterilization. Increasingly, young people who have all the children they want, have adopted this form of contraception that is not reversible. That should be one of the leading reasons to expect that the birthrate is not likely to boom in the future the way it did after World War II.

Increases in school and college enrollment rates will probably be much smaller than they have been. Without a continuing decline in the birthrate and with less of an increase in education level which enhances the employability of the young adult population, the odds seem to favor a slackening of the rate of increase in labor force participation of women over the next decade or two. These developments should tend to stabilize family size and also stabilize some of the forces that have been contributing heavily to the increase in divorce.

Today's young family of two children stands in sharp contrast with their great-grandparents' family of four children. One would expect that the father and mother of today, and of tomorrow, can spend more time with each of their children and with each other, apart from their children. The period of childrearing has been shortened by 3 years since the turn of the century. The period after the children leave the home before one parent dies has been increased by 11 years.

The latter change increases the post children period of life and is largely a consequence of the improvement of survival rates of adults. Also, young people are postponing marriage an average of 1½ years more than they did in the 1950's. The longer this pattern of increasing postponement of marriage persists, the more likely the prospect becomes that the extent of life-long singlehood among young adults of today will increase. Unless women now in their twenties have an unusually large amount of late marriages, the chances are that, in proportion to their counterparts of 20 years ago, one-half to two times as many will remain single throughout their lives.

The marriage and divorce rates have stabilized for approximately the past 2 years and have a good chance of remaining relatively stable. The marriage rate reached a peak back in 1972 and then declined until 1975. Since that time, it has fluctuated very little. On the other hand, the divorce rate continued its historic rise until 1976, and for nearly 2 years it has been virtually unchanged.

The future propensity of young adults to marry cannot be forecast with a great deal of confidence at this time. Nevertheless, there are reasons to expect that the proportion of young adults who marry will level off or rise moderately for a few years and then rise still more after that time. When the low birth cohort of the present time reaches the age for marriage, they will find it easier to become employed, settle down, and raise their family.

The future course of the divorce rate is also difficult to forecast. To the extent that the level of divorce is related to the level of marriage with a lag of 4 or 5 years, the prospect for the divorce rate to decline somewhat in the next few years seems reasonable.

Thereafter, the fluctuations in the divorce rate might be expected to occur in a pattern similar to the future fluctuations in marriage rates of about 4 or 5 years earlier.

What is the outlook for change among one-parent families? Despite substantial increases in divorce and informal living arrangements during the last couple of decades, the preponderant majority of people, about 87 percent, still live in households maintained by a nuclear family. A much smaller proportion, about 79 percent, of children under 18 live with two parents. Eighteen percent live with one parent, and the other three parcent live with neither parent, but usually with one or more relatives.

The 18 percent of children who live with one parent represents a doubling of the corresponding proportion in 1960 when it was 9 percent. The proportion for blacks at the present time is three times that of whites or 43 percent for blacks versus 13 percent for whites.

Since many children move between two-parent families and one-parent families, we estimate that 45 percent of all children born this year will spend at least several months in a one-parent family before they reach the age of 18 years. The corresponding proportion a few decades ago was 30 percent, but then more of the families were dissolved by the death of a parent rather than by divorce. Most people would probably agree that the most desirable situation is for children to live with two relatively harmonious parents, but that is far from the actual situation.

The Census Bureau can demonstrate that three-fourths of the increase among children living with only their mother has been occurring among those whose mothers are high school graduates or who have completed some college training and are therefore likely to be self-maintaining, despite the fact that they may be at a somewhat lower economic level than if they were married. Young mothers who are economically independent and who choose to live, at least for a while, in the unmarried state, can be expected to go on increasing in numbers, but the great majority, about three-fourths of them will remarry eventually.

During the last two decades, the social pressure on young adults to marry, to have children, and to stay married, has been diminishing. During the next two decades the social pressure for both a working mother and her husband to be employed full time, may also be expected to diminish. Relaxation of pressures in these ways would be expected to increase the quality of the marriages that are initiated and of those that remain intact.

An appropriate closing to these thoughts about the future of the American family is the following sentence from President Carter's announcement of the forthcoming White House Conference on Families: "I am confident that the American family is basically sound and that we can and will adjust to the challenges of changing times."

Thank you. If you have questions, I would be glad to answer them.

Mr. ERLENBORN. I think we will reserve questions until we have heard from all four of the panel members. The next panelist is Peter Morrison. Dr. Morrison is a member of the senior staff of the Rand Corp., serves on the board of directors of the Population

Association of America, and is a member of the Population Research Committee of the National Institute of Child Health and Human Development. Dr. Morrison, let me say that your entire statement will will be introduced in the record. At this point you may proceed to summarize it.

STATEMENT OF PETER MORRISON, SENIOR SOCIAL SCIENTIST, RAND CORP.

[Prepared Statement in Appendix on p. 307.]

Dr. MORRISON. Thank you, Mr. Erlenborn. My testimony focuses on current demographic change in regions in the United States and draws on two recently completed Rand studies, done with support from NICHD and the Economic Development Administration.

My testimony addresses the following questions: first, how are national demographic trends being manifested in different regions; second, what public concerns are following, and can be expected to follow, in the wake of these trends; and third, what roles might public policy assume vis-a-vis, these issues.

The views and conclusions that I will express here are my own, and they should not be interpreted as representing those of the Rand Corp. or any of the agencies sponsoring this research.

Let me begin by stating how regional demographic change impinges on congressional concerns. First, demographic processes continually alter the groups of recipients and donors in various kinds of transfers. One important type of transfer is across regions, through programs for urban and regional development, revenue sharing, and indirectly through Federal procurement. The second way in which these changes impinge on congressional concerns is that they often undermine long-standing economic and political balances, or make it difficult to achieve some sought-after balance. My purpose here today is to furnish you with some perspective on how these regional population trends are shaping and lending urgency to the policy issues before Congress.

Let me begin by giving you a quick rundown on what is happening. In metropolitan areas, local population stability and decline have become more commonplace. Since 1970, 42 of the Nation's 259 SMSA's—Standard Metropolitan Statistical Areas—have failed to register any significant population growth. This cessation of metropolitan growth is partly the result of a lower birth rate, but it also reflects the excess of departing migrants over arriving migrants. As the magnetism of the cities has waned, their population has simply stopped growing or has begun to decline. Of course, this has severely strained the traditional mechanisms of municipal finance in many places.

The counterpart of this trend is the revival of growth in nonmetropolitan areas, specifically in the small cities and towns, including those that are remote from existing metropolitan areas. We are talking not only about areas that might conceivably be subject to metropolitan overspill, but also about areas that lie perhaps several hundred miles from an existing metropolitan center. Many of these small communities are ill-equipped to cope with the sudden population growth that they have been experiencing and lack the array of institutional arrangements for coping with growth.

The changing directions of migration here also are producing a variety of regional conflicts of interests and new regional political coalitions centered on the Frost Belt, the Sun Belt, and others.

This "tournament of the belts" has to be seen as a kind of preliminary bout to the main event, which is the tension between growing and declining cities. Here the contending factions are made up of the Clevelands, Buffalos, and Detroits where growth has stopped, and the Tucsons, Boulders, and Petalumas, which see themselves as being victimized by the access that migration confers on places.

In section III of my prepared statement, I describe these new patterns of regional growth and decline. I would like to insert for the record an example that might be of particular interest to Congressman Scheuer. It deals with New York State, which I regard as an exemplary case study that points out one of my central arguments. It is that shifts in migration are determining where the symptoms of the national population slowdown are first appearing. The title of this paper which I would like to insert in the record is "New York State's Transition to Stability, The Demographic Outlook."

Mr. **Erlenborn**. Without objection, that paper will be inserted in the record following your written statement.

[Additional material in appendix with prepared statement.]

Dr. **Morrison**. Much of the Nation's geographic diversity is concealed within the large census regions, the Northeast, North Central, South, and West. In my prepared statement I have tried to elucidate these patterns at a somewhat finer geographic scale, using a system of subregions developed by my colleague, Calvin Beale of the USDA's Economic Research Service. These subregions divide the Nation into 26 economically and culturally homogeneous areas.

Two principal points emerge from these statistics. First, migration continues to support metropolitan growth in the 1970's. We are not in the situation where all metropolitan areas have suddenly stopped growing. What has happened is that the locations of metropolitan growth have shifted from the traditional growth areas to new sections of the country which have not experienced growth in the past. Thus, the urbanization process continues, but in different locations. This has given rise to very powerful political conflicts.

The second point I want to underscore here is that nonmetropolitan settlement patterns have changed in a very fundamental way, and in virtually all regions. Nonmetropolitan areas seem to have evolved beyond the point where growth is contingent upon proximity to a metropolitan center. We can no longer attribute this growth exclusively to metropolitan overspill.

The concluding section of my statement considers the public concerns growing out of these shifts and suggests some policy alternatives. The view that personal success is achievable as readily outside one's native region as it is inside is a distinctive and deeply ingrained element of the American culture. This view enables individuals alert to opportunity to exploit newly developed resources or knowledge quickly.

The American economy benefits from the readiness of its population to migrate. Our tradition of migration moves people from areas where jobs are dwindling to places where workers are needed; without this tradition, the development of the Nation's economy would be sluggish and far less efficient than it has been over the years.

As the work force rearranges itself in new ways, however, the resulting shifts pose common kinds of problems in specific places. I have alluded to these in my statement under a number of headings.

One kind of problem I term "head-count" concerns. Here we are talking about the share of Federal largesse that is distributed to areas on the basis of their population. Places that are declining receive a dwindling share, although they may well merit increased Federal attention by virtue of the fact that they must cope with the problems of decline.

Another kind of problem I term "labor force quality" concerns. The notion here is that as people enter or depart, an area's labor force may gain or lose in terms of the mix of skills available—even though numbers may change only moderately.

Concerns about dependency should require no elaboration here.

Concerns about undocumented aliens have aroused strong sentiments and a preoccupation about the "X rated" statistic, how many of them there are. We simply don't know.

Two final points to which I want to call your attention are what I term local "shrinking pains" and newly experienced growth.

In terms of the "shrinking pains," many localities have discovered that decline is not a graceful process. An understandable reaction is an urge to reverse it, but many places can no longer realistically expect to grow. Unfortunately, we have had very little experience accommodating no-growth, but we had better learn now to live with it, because nationwide about one out of every six metropolitan areas today has stopped growing. Altogether, one-third of the metropolitan population resides in one of these no-growth areas. As for the future, I foresee an increase in the incidence of stability and decline at the local level.

The counterpart, of course, is newly experienced growth. I am sure that Congressman Akaka is familiar with the problems here. In his State of Hawaii, the Governor has proposed Federal legislation to control the influx of migrants.

This same growth control sentiment manifests itself at the local level, and I think that such sentiment will intensify as these new patterns of population redistribution continue.

Let me conclude by considering possible roles for policy. In my opinion, I think pressure is likely to build for two broad types of legislative action. The first consists of actions to ameliorate the more visible consequences of migration at the local scale. Under this approach, policies would focus on assisting localities in dealing with the common problems imposed by regionwide growth and decline.

For example, many large urban centers in the Northeast face the prospect of continued outmigration and its ensuing shrinking pains—a withering tax base without a corresponding reduction in demands for public services, and of course, the need to manage an excess inventory of housing, underutilized facilities like schools, and so forth. These are common problems that arise at the local scale and might be addressed by Federal policies promoting an orderly thinning out and reduction of excess capacity.

The newly growing nonmetropolitan sector, in contrast, is experiencing sharply increased demands for public services, and policies there should focus on enabling these areas to cope with rapid growth.

The second kind of pressure I foresee is for legislation to federalize the redistribution of resources to match the population's changing locational patterns. These actions would acknowledge that as people freely migrate some regions will gain population while others will lose, and that within a given metropolitan area some jurisdictions will gain and others will lose. Acknowledging this inevitable fact, a second approach would seek to transform such problems as welfare dependency, which disproportionately accumulates in certain places, into national responsibilities.

These approaches I have described do not define policy. They express ways of viewing regional change and devising organizational responses to the problems that change engenders. Thank you.

Mr. **Erlenborn**. Thank you, Dr. Morrison. The next witness will be Mr. Vincent Barabba, the manager of market research for the Xerox Corp. and former Director of the U.S. Bureau of the Census. Mr. Barabba, your statement as presented to the committee will be put into the record without objection, and you may proceed to summarize it.

STATEMENT OF VINCENT BARABBA, MANAGER, OFFICE OF MARKET RESEARCH, XEROX CORP.

[Prepared Statement in Appendix on p. 369.]

Mr. **Barabba**. Thank you, Mr. Erlenborn. If my colleagues from the Census Bureau will allow me to project from a sample of one, I think I will be able to reinforce Dr. Morrison's discussion of migration particularly as it relates to exploiting opportunity in the migration process.

Interestingly, my example is directly related to the members in attendance at this time. Mr. Erlenborn, I was born in Illinois, the child of first and second generation Italian immigrants. Mr. Beilenson, following the war, I moved to California with my parents. To all the members, I came to Washington, D.C., to take advantage of a job opportunity in government, and I have just recently moved to New York State and, Congressman Scheuer, you may be interested to know that I found a job opportunity in New York State. [Laughter.]

Mr. **Scheuer**. Well, I found problems with the population shift because in 1972 when three House seats for New York City were lost, I was one of the victims. It focused my mind on the importance of understanding population ebbs and flows and their impacts. It has one hell of an impact on my life. [Laughter.]

Mr. **Barabba**. Mr. Scheuer, I was asked to comment on the implications that population changes might have on voting behavior and lifestyle in our society, and for the sake of brevity I'll just comment on the basis of some of the more pertinent changes. I can recall when not too long ago there was a rather strong feeling that the young people would soon be taking over the legislative bodies of our country because we were going to become a younger society.

I think the problem with that statement was really twofold. First, people were not aware that things could change dramatically. Second, they were giving the average age of a total population rather than the average age of the voting population, and when one looks at the differences between those two statistics, the difference is quite significant. My colleagues at the Census Bureau have indicated that by the year 2000, which is really when we are supposed to be run by the young people of America, that the median age of the voting population will be between 42 and 43 which, as I understand, is even worse than being 30.

An important aspect of an older, and not a younger population is people's attitude toward legislation as they start reaching age 65; particularly as it relates to how they expect society to care for them now that they have made their contribution. Additionally, we shouldn't just look at those over 65; I think we should also look at those 50 to 65 who may be thinking about what society is going to be providing for them when they reach 65.

Again, the Census Bureau has done a projection, and we estimate that the percentage of people 50 years old and over will be about 28 percent of the total population and 38 percent of the voting population by the year 2000, which is not very different than it is today. The impact that these groups could have on Congress, however, could be significant, particularly if they continue their migration and start concentrating in specific areas of the country. If this should happen, we could find ourserves with congressional districts, which have much higher concentrations of older people who will be interested in programs related to caring for our older population. We would then find ourselves with a much larger congressional delegation committed to caring for older Americans. I would also point out that these constituents would be very interested in quick payoffs since their long-range perspective is necessarily limited.

Immigration is another area that could cause tremendous changes in our political behavior as a society because as the growth of our society from natural reasons continues to get smaller, the constant flow of 400,000 immigrants each year will become a larger portion of new population growth.

In fact, we could expect between 20 to 30 percent of all the growth in the population between now and 1988 to come from immigration. In whole numbers, we could see about 4 million immigrants in the 10-year period of 1975 to 1985 which is really equivalent to, in today's numbers, seven congressional districts, without even counting the children the immigrants will have once they come to the United States. Four million would also be greater than the current population of more than half of our States.

One other major concern that I think about from time to time is the difficulty that the Congress might have in trying to assess the needs of society. In the past, as my former colleague and good friend, Dr. Glick, has pointed out, we used to have a dominant form of economic enterprise in this society called the family. Generally, it was a family of two children. As elected representatives talk about the problems that were faced by that economic enterprise called the family, they were able to generalize from their understanding of the family. As the Census Bureau and others have pointed out, we are going to be facing a much more diverse group of families. There will be more of them, and they will be quite different in their makeup.

Forming a coalition that Congress can address and understand out of this new group will be quite difficult, and I think it leads to the area that I am most concerned about and that is: How elected representatives at all levels of government are going to require different information technologies to understand better the shifts that are going to take place. These will be particularly in demand since you won't be able to use the average American (even though we should not have been using him all these years because that average American is really a statistical myth). The important points is that the range around the means of population characteristics will be much more diverse.

I think it is incumbent on the Congress and all legislative bodies to face up to the very difficult issue of the conflict that you are going to run into in trying to resolve the desire to understand society better while at the same time facing another ever present concern that many of us have. That concern is the right to privacy relative to what we are willing to tell government about ourselves.

I think that as society becomes more complex these two issues will join. It is going to be very difficult for those who are asked to provide information to you so that you can perform your mission of better dealing with the problems of society, while at the same time facing your constituents who have asked you to keep away from them these very same people who are asking all of these impertinent private questions.

Thank you very much.

Mr. **Stockman**. Dr. Espenshade, you may proceed.

STATEMENT OF THOMAS ESPENSHADE, PROFESSOR OF ECONOMICS, FLORIDA STATE UNIVERSITY

[Prepared Statement in Appendix on p. 384.]

Dr. **Espenshade**. Since today's session is deliberately intended to be an overview session, my prepared statement was also deliberately general and touched on a number of topics.

In my summary statement, I would like to focus particular attention on the implication of population changes in the United States for per capita income and then also, if I might, speculate on what some of the policy implications of these demographic changes are.

The question about the size of per capita income in the United States has been studied by economist demographers from both a theoretical perspective and also from an empirical perspective. Unfortunately, these studies yield rather ambiguous answers, not only with respect to the direction of the effect, but also with respect to the magnitude of the effect. I will have some other things to say about the implications of population size for GNP itself, but first let me talk about per capita income.

There have been two theoretical approaches to the question of how alternative rates of population growth affect per capita income. One has evolved largely from what we call a dependency burden argument, which says essentially that a slowdown in the rate of population growth is going to have an impact on the age composition of the population in the United States, putting a larger proportion of the population in the working ages and a smaller proportion of the population in the dependent age groups.

Moreover, a slowdown in the rate of population growth is assumed to have an impact on female labor force participation rates. As married women have fewer young dependents to care for, female labor force participation rates are assumed to increase.

These two features together—a larger fraction of the population in the working ages coupled with a rise in female labor force participation rates—have the effect of creating a larger fraction of the total population in the labor force and concomitantly, a smaller fraction of the population in the dependent ages or out of the labor force.

Arithmetic alone tells us that these changes imply an increase in per capita income. Some economists feel that with this slowdown in the rate of population growth, the amount of capital per worker is also going to rise, which would further contribute to a rise in per capita income.

The other type of theoretical approach to the problem yields somewhat different answers, and this is largely on the basis of reasoning from long-run growth models. Frequently the focus in these models is only on growth in income itself, with a failure to take into account the corresponding changes in population size. Nevertheless, some of the models that do look specifically at per capita income suggest that in the long run the rate of growth in per capita income must inevitably equal the rate of growth in technical progress.

It is sometimes further assumed that the rate of growth in technical progress is going to be slower in a more slowly growing population. The argument is that you have an essentially older labor force which, because of a slower rate of entry into the labor force, is likely to be less innovative and less prone to come up with new technological improvements.

This type of theoretical reasoning would tend to suggest perhaps that a slower rate of population growth might in the long run imply a somewhat slower growth in per capita income. So, we have conflicting answers if we approach this problem from a theoretical point of view.

There have also been a number of empirical studies, and in these cases there is generally more unanimity of opinion about the impact of a slower rate of population growth on future levels of per capita income. There are two studies in particular that are relevant and both of them follow along the lines of the dependency burden reasoning which I mentioned earlier. First, I want to recall a study that was prepared as part of the U.S. Commission on Population Growth and the American Future in 1972. Two alternative projections of the U.S. population were followed, one corresponding to a three-child-per-family average and the other to a two-child-per-family average.

It was shown that the slower rate of population growth would result in a higher level of per capita income over time, although I must admit that the changes—the differences in per capita income that followed a difference of a full child per family—were not in fact that large. Between 1968 and the year 2000, in the more rapidly growing population, per capita income was expected to grow at an average annual rate of 2.6 percent, whereas the more slowly growing population it would grow at an average annual rate of 2.9 percent. Thus, there was not a very large difference. If you make comparisons between the two series, in the year 2000, for example, and these numbers are measured in constant 1958 dollars, the more slowly growing population was expected to have a per capita income of only 11.7 percent higher.

These kinds of differences in per capita income have also been shown by Ronald Ridker, an economist at Resources for the Future.

No matter which of these two approaches we take—a theoretical approach to the problem or an empirical approach—there are a number of unresolved issues that still require additional investigation.

I should also point out, as is probably quite evident, that focusing on per capita income as an indicator of overall economic well-being has obvious difficulties. It is a convenient summary measure for the average level of well-being of American citizens, but it ignores a number of issues that are probably also of concern to the Committee.

It ignores, for example, the question of the income distribution of the population. It does not really tell us much about how income is distributed around that average, and it also ignores a number of considerations that follow along with the demographic composition of the population. It generally ignores our questions of age composition, average household size, and the attendant economies of scale. These demographic considerations generally would have the effect of narrowing even more the differences in per capita income between a population growing at a higher rate versus one growing at a slower rate.

Let me turn now to some of the policy implications that I see following out of demographic trends in the United States. Let me say first that it was the conclusion in 1972 of the U.S. Commission on Population Growth and the American Future that "We have looked for and have not found any convincing economic argument for continued population growth." In my opinion this conclusion is still valid in light of the 6 years of research that has taken place since 1972.

I think a number of specific policy implications flow from these demographic trends. One, I think, relates to the continuing trade deficit in the United States. One of the things that I have already mentioned is that different rates of population growth have a relatively small effect on per capita income in the United States. However, the total size of GNP is much more sensitive to rates of population growth, because it is tied more closely to the size of the population. Let me just indicate some figures on this particular topic, again, according to some projections that were prepared by Ronald Ridker. He used 1975 as the base year and then projected the size of GNP to the year 2000 and, then to the year 2025, on the basis of two alternative population projections—one corresponding to an average number of children per family of 2.5 and one corresponding to an average number of children per family of 1.8.

He found that by the year 2000 significant differences in GNP had not yet emerged. The more rapidly growing population had a total GNP by the year 2000 that was only 4.4 percent higher than that of the more slowly growing population. However, beyond that point substantial differences in GNP did start to emerge. By the year 2025, the more rapidly growing population had a GNP 28 percent greater, and of course, these differences are going to be magnified the farther into the future they go.

The importance of these GNP projections is that the demand for some items is related more to total GNP than it is to per capita income. I am thinking in particular about the demand for energy in the United States. The U.S. Department of Energy has recently estimated that energy consumption rises 3 percent for every 4 percent increase in GNP. Thus, other things the same, according to the projections that Ronald Ridker has prepared, the U.S. energy demand would be approximately 20 percent greater in the year 2025 with the population projections corresponding to 2.5 children per family than if the population grew at the lower rate.

One of the implications that I see from this is that a slower growing population could ease the pressure on the trade deficit, particularly on oil imports into the United States and have beneficial effects on the depreciating value of the dollar.

A second area refers to the social security system. This has already received much attention, and I want to just mention it briefly. This problem may have been created in large part by demographic changes, but I would like to emphasize that I do not think that we should necessarily seek a demographic solution to the problem. In particular, I do not believe we should attempt to stimuate the birth rate in order to correct the age composition of the population and thus ease the financing problems with the social security system.

On another issue—and I am a little bit less certain of my statistics here—I see another possible implication of population changes in the United States for the Humphrey-Hawkins bill. Please correct me if my memory is faulty, but my recollection is that one of the targeted objectives of the Humphrey-Hawkins bill is a reduction in the unemployment rate to 4 percent by 1983.

An economist at the University of Pennsylvania, Michael Wachter, has calculated that the rate of unemployment that will not accelerate inflation has been on the rise recently. In particular, it has risen from approximately 4 percent in 1957 to a current level of about 5.5 percent. This is the rate of unemployment that will not contribute to accelerating inflation in the United States. His projections show that the rate will only decline to about 4.5 percent by the period 1985 to 1987. So if the targeted objectives of the Humphrey-Hawkins bill are actually met, what that possibly implies is excessive inflationary pressure on the United States, because you are attempting to get below what is otherwise the level of unemployment that will not accelerate inflation.

Finally, let me conclude with one other area of policy implications that we have not focused on. This concerns the whole area of continuing education—the area of life-long learning. It has been speculated that an older labor force, which necessarily follows from a slowdown in the rate of population growth, would be geographically and occupationally less mobile. Therefore, there may be a need to focus greater emphasis on continuing education to create the kinds of occupational flexibility in the labor force that might otherwise be created by large numbers of new entrants into the labor force.

Of course, this kind of employment training has already been provided for in some respects, but I see an interest on the part of many colleges and universities in the United States to focus renewed attention on this older age group. Possibly, colleges and universities will need help in designing the proper curriculum to meet the changing needs of the marketplace.

Thank you, Mr. Stockman.

Mr. **Stockman**. Well, thank you. I want to thank the entire panel for your very fine statements and to apologize to the first three members for my absence while you made your presentations. I have a group of about 80 businessmen from my district here today who are very concerned about the growth rate, the high growth rate of the population of Federal bureaucrats, so I had to meet with them, but I have had a chance to look at your statements. Jim, do you have any questions?

QUESTIONS AND REMARKS

Mr. **Scheuer**. I too want to thank the panel very much for your stimulating testimonies. As you all know, the purpose of this hearing is to help us pinpoint both for the executive branch and for the Congress how our government can effectively anticipate and respond to population change.

I think we would all agree that our experience in responding to demographic changes has been poor. An example is the Government's failure to plan within the educational system for the baby boom and subsequent bust. Today, there are schools that have been built in the last few years which are half empty due to population shifts. Other schools have become more densely populated and are operating far beyond planned capacity.

I would like to ask this question of the panel. Can any of you suggest ways in which our Government should prepare for perfectly evident population changes and the consequences that they will predictably bring? How do we systematically factor population change into a long-range plan for all Government facilities and services?

Dr. **Morrison**. We should recognize that the question you pose has two distinct facets. One is technical, can we get better information; the other is political, how can we build public recognition of these complex long-range problems and of the need for Federal action.

With regard to the technical facet, there has been a commendable increase in the output of information by the Census Bureau in recent years. It is the kind of information that I can apply to these problems of long-range adaptation to demographic change. There is always room for improvement, but I can't really complain about a deficit of good information.

Where I do see room for improvement is in the procedures whereby public perception of these problems is enhanced. Social security is an excellent illustration of how an unfavorable demographic context exacerbated other more immediate nondemographic problems, but failed to be recognized in those terms so that long-term solutions were not devised.

In short, I see the institutional problems here as being dominant.

Mr. **Stockman**. Thank you. Dr. Glick.

Dr. **Glick**. Mention was made a while ago about school buildings that are now empty. This situation leads into one of the thoughts that I had mentioned in my longer statement, namely, that it would seem quite logical to use some of the empty school buildings plus some of the people who have been trained to teach school but can't find jobs, to care for the children of women who want to work. These women could make a contribution toward the payment for such day care in proportion to their ability to pay. Doing so would help make positive use out of some white elephants that these empty school buildings have become.

Another consideration is that we are a pluralistic society, and we have many different family forms. I believe that legislation should acknowledge this fact and give persons in the several marriage arrangements as nearly equal treatment as is possible. Finally, something should be done to modify the welfare laws to get the husband back into the home if that is where he prefers to be. It should no longer be financially beneficial for him to stay away from the home.

Mr. **Barabba**. Mr. Scheuer, my reaction to the question is that I look back on the time that I spent in the Census Bureau—and I think Dr. Morrison correctly identifies the bureau as a fairly responsive Government agency—I can't really recall ever being asked the questions that this committee is asking today.

Most of the times when we came to the Congress it was always in response to "why do you ask the questions that you ask and why do you bother my constituents?" I think that the tone you have set for this series of hearings is really an excellent one because, as Dr. Morrison has pointed out, there is considerable information available. However, there exists no mechanism, to my knowledge, that brings the equally important area of developing policy analysis together with the agencies that gather information. Additionally, there is no policy oriented mechanism available to help establish priorities relative to the collection of information—particularly with a forward look.

I would also identify that in addition to the initiative of this committee, there is other good news. The President has seen fit, in his reorganization project, to address the issue of the reorganization of the Federal statistical system. I think he has wisely chosen not to take apart something that has demonstrated its capabilities in the past, but to deal with the issue of developing mechanisms that allow a better interface between those who have to establish policy and those who will be providing the data and the information upon which that policy will be determined.

In answering your question of what can be done, I think hearings like the ones that you are having are an excellent start. But continue your action by bringing together those people that come to you with ideas relative to new policy and by insuring that they are coming to you on the basis of reliable information. It is important that there are mechanisms established to allow the statistical agencies to be better prepared to deal with these forthcoming issues.

Mr. **Scheuer**. Yes, reliable information is needed for our own policy and program design responsibility and for our own oversight responsibility. We don't have the information that we need to do our job. Of course, we don't think the administration does either, and a perfect example of that is in the area of illegal immigration.

The administration has sent a bill to Congress, and it seems to be perfectly apparent that they don't have the basic factual data that they need to create an intelligent bill on illegal immigration. They can't know what the consequences would be of legitimatizing many millions of illegal immigrants in this country. If they do, they certainly know something that we don't know. We don't begin to have knowledge of the various kinds of impacts illegal immigation has on our society and on our various government programs at the Federal, State, and local levels. We don't know how many illegal immigrants are here. As you know, the estimates vary from 2 million to 12 million.

We don't know the impact they have on social and Government services. There are those who say they make very little claim on Government services because of their status of illegality. They work like the devil taking jobs that most Americans don't want to take; they help keep going businesses that rely on low paid and rather poorly treated labor; they give the consumers a break because products can be priced more cheaply than they would be if the workers were paid decently and given decent working conditions.

There are others who say no, that is not true. Illegal immigrants do take jobs that Americans would like; they do make significant demands on public services. This group would support the city of Los Angeles in its suit against the Immigration and Naturalization Service for $50 million a year for costs incurred by the city to provide health services for illegal immigrants.

How can we make policy on this subject? How can the administration in all honesty send down a legislative program? The administration's bill divides immigrants into separate groups, those who have been here less than 1 year, another for 1 to 7 years, and another for over 7 years. But everyone knows that within 24 hours or so after an immigrant arrives here illegally, for $100, or $200, or $250 he can get a set of documents—a birth certificate, school records, employment records, and rent receipts—that go back to when the memory of man runneth not and that he can in effect prove that his ancestors came over on the *Mayflower*.

So, the basic divisions in the administration bill of the various categories are totally ephemeral, as far as we can figure out. We wonder how the executive branch can approach the question intelligently and professionally with so little data.

Maybe you could tell us how we can produce a data base that will quantify the problem in terms of numbers and impact on society.

Dr. **Espenshade**. Let me speak to the question more generally. I understand the immediate concerns——

Mr. SCHEUER. I hope that some of you will give us some specifics because we really need them. We need help in designing programs that will give us a rational data base. We would like a formula that will pull together the enormous talents of the Bureau of the Census, INS, HEW, the Department of Labor, and the AID program in the State Department—all of whom formulate or use some kind of demographic data on the subjects we have been discussing. I hope that all of you will respond if you have any specific thoughts on how Congress can ameliorate this problem.

Dr. ESPENSHADE. Let me answer that question specifically but somewhat indirectly, if I can. I agree with you that it is a shame that we focused here on a specific problem for which even academic types don't seem to have any answers.

I think it is a greater shame that there are many kinds of questions that policymakers have to deal with that academicians do have somewhat greater information about and that information is not utilized either.

Mr. SCHEUER. You are absolutely right.

Dr. ESPENSHADE. To speak specifically to your question, Mr. Scheuer, one of the things that I am encouraged about—and this is at the State level, but there may be implications for the Federal level—is that some States have set up State population commissions. These vary in their composition, their makeup, and so forth, but the general purpose as I understand it is to bring together groups of people in that State—some from the university community, some from the legislative community, some from the business community. Hawaii is one State in particular. It has been talked about in California; it has been talked about some in Wisconsin. The general purpose of these commissions is to serve as an advisory committee to policymakers, to advise on how demographic changes are affecting what kinds of legislation that may be necessary, and, conversely, how legislation perhaps affects demographic changes in the State.

Mr. SCHEUER. Excuse me. This is the first I have heard of that. I think it would be extremely helpful to the committee if you submit, some time in the next week or two, some information on which States have done this and what those population commissions are doing.

Dr. ESPENSHADE. I will try to put that information together.

Mr. SCHEUER. We will hold the record open, let's say for 2 weeks, for you to get this information in. If you need a little more time, I am sure we can arrange it.

[See responses to additional questions.]

Dr. ESPENSHADE. By implication, I was suggesting that that might be a prototype that could be modified and made adaptable to the Federal level.

Mr. SCHEUER. I take it these commissions are under the executive branches in these States, not in the legislative bodies

Dr. ESPENSHADE. You are questioning me on specifics that I don't have, but they are advisory committees that have members from the academic community and possibly, from the business community, plus certain legislative input. It is an attempt to draw on the data base that we already have to make positive input into policymaking.

This answer doesn't speak perhaps to the illegal immigration problem, but I think it might be one type of possible solution to making better use of the information we already have available.

Mr. **Barabba**. Mr. Scheuer, I would add a specific State to that comment. I think Minnesota actually has a position called the State demographer, and a person is appointed to that position within the executive branch in this case. I think the State of California has within its health area a very distinguished demographer who provides current information to both the executive and the legislative branches.

In fact, the Census Bureau has a Federal-State cooperative agreement in which all States participate in determining the current population estimates of the State. It is a joint effort in which the Bureau not only shares information with the individual States, but develops a training program for those individuals and sponsors seminars to assist people in developing better methods.

To the question about what else we can do—one of the great frustrations I had when I was in Government was that it was always difficult to try to communicate with the Congress in a setting such as the one we are in today. It doesn't really lend itself to a working relationship between the development of policy and the knowledge that you have about the area in which the Congress is about to deal. The examples of a statistical or a policy development agency and the Congress getting together and really working it out in heavy staff sessions were an exception to the rule.

In fact, I used to dread opening up the paper and finding that another piece of legislation was passed that had within it a set of directions to the Director of the Census Bureau saying that you will collect on such and such a date this kind of information knowing full well that you have neither the ability nor the resources to go out and do that job. What was frustrating was that all of these requests for new information were normally associated with important issues, and the agency wanted to be responsive, but could not because there was not sufficient planning and preparation.

My recommendation would be to find different mechanisms for cooperation than what we have been using. As important as congressional hearings are to identify issues, I don't think they solve problems in the sense you are talking about.

Mr. **Stockman**. Would anyone else like to comment on Mr. Scheuer's question?

Dr. **Morrison**. Let me offer a specific suggestion for your consideration. The Annual Manpower Report of the President provides a practical model of what may be needed here. That report distills the basic information on labor force characteristics and trends, highlights structural problems and their implications, and reviews Federal programs addressing those problems.

The Census Bureau issues an annual population profile which has some of these elements. The profile may be a good model to build on because it contains the core of what is needed and could be elaborated on considerably if there were congressional interest in that direction.

Certainly, a lot more factual information could be inserted, and more interpretation relative to policy concerns could be added.

Such interpretation might be separated from the Census Bureau staff, which is oriented toward reporting the facts, and assigned to some other group that could review alternative courses of action and focus on defining what the problems really are.

Mr. **Scheuer**. That is a very interesting suggestion. Are you suggesting then that the Congress or that this committee or some other committee of Congress should put out an annual population report indicating changes in our population and implications for various government programs, or that this should be done in more elaborate form by the Bureau of the Census?

Dr. **Morrison**. I would recommend the latter. Perhaps the Congressional Budget Office would be more appropriate. But the point here is that we need an activity of this type that would move the annual population profile in the direction of the Manpower Report of the President.

Mr. **Stockman**. Would this be desirable to do on an annual basis though? It seems to me that I look at all these demographic projections. In short periods of time, you get very little change even if you have a major demographic variable change. You have so much inertia in the population as a whole in terms of its size that over time the effects become cumulative, so if you get a variable change, say fertility rate, 20 years out it doesn't make much difference, but 50 years out it makes 100 million difference in the population. Wouldn't it be more desirable to have a 5-year kind of forecast rather than every year? It would get rather redundant, I would think. Not that much happens in 1 year on population.

Dr. **Glick**. One of my duties is to coordinate the preparation of the annual population profile that the Census Bureau issues, and I will be glad to send you a copy of our current report. It regularly compares data for the current year and for an earlier year such as 1970. Its purpose is simply to bring up to date facts that are needed to show the demographic highlights of the recent past. It does not attempt to get into policy issues, but is meant to be an instrument that can be used by people who do develop the policies.

Mr. **Barabba**. Mr. Stockman, I could add to the comments that Dr. Morrison made. I think it was in 1976, as part of the Bicentennial activities, that the total Federal statistical system got together and produced a publication called STATUS which stood for Statistics United States. It was an attempt to take a look at the total domestic picture of the United States, but realizing that different individuals had different ways of looking at information. It took highlights from the detailed reports which all statistical agencies were publishing and presented them in a graphic form. All the reactions to the publication that I can recall were really quite positive in the sense that it met a broader interest group who could then get a sense of what was going on in our society. In fact, this became a monthly publication for a period of time and there was sufficient information being published about the country that we were able to produce a monthly chart book of what was going on in the United States.

Unfortunately, Congress saw fit to cut that item from the Census Bureau's budget when they came forward with it for continuation. Examples of that publication still exist. From all the reaction I received at the Bureau, even from my colleagues in the private sector, I think that it was really something most useful. I believe those evaluations would probably be in the Bureau's files.

Dr. **MORRISON**. Let me be precise on my recommendation. It is that you look at the manpower report of the President as a model of what the annual population profile might become. That means not simply reporting but also interpreting and relating the data to issues of contemporary concern. It is this interpretation that needs to be done annually.

Mr. **SCHEUER**. What do you think the most appropriate interval would be, assuming that we recommend some kind of an enlarged report?

Dr. **MORRISON**. I would say biennially at the most.

Mr. **SCHEUER**. Every 2 years would be reasonable taking into account the objections that Mr. Stockman raised about doing it every year.

Dr. **MORRISON**. Well, the projections may remain the same, but the interpretation of the issues, of course, changes continually.

Mr. **SCHEUER**. You think a 2-year period would be optimal.

Dr. **MORRISON**. At the most—2 years or more often.

Mr. **SCHEUER**. Thank you very much, Mr. Chairman.

Mr. **STOCKMAN**. I have one question I would like to direct to the entire panel. We have been commended for asking some new questions and looking more at length into the future than congressional committees normally do, but the longer I listen to this debate the more I am inclined to take a skeptical posture. Can we predict major demographic variables with sufficient precision to be a base for policy decisions?

This morning the Census Bureau witnesses testified that in the aggregate there can be major changes in the population within the next 50 years. That has some kind of policy implication, but I am not sure what kind, since there aren't very many specific policies that we act on from week to week, or month to month, from one committee to another that relate to the population as a whole.

But, we do have policy domain such as retirement policy and how to finance social security, health costs and how to finance these for an aging population. As I started to look at some of these specific policy areas where we would hope that better demographics could aid in formulating more appropriate policies, I wonder whether we have the basis for making projections that would be accurate enough or reliable enough to actually do that.

For instance, we know that the retirement population is growing in absolute size. Dr. Morrison, I have heard some of your presentation on that in the past, but the relevant variable in terms of the financing question is the relationship between the size of the working population and the size of the retired population. The denominator will be determined in a large part by future fertility rates.

None of the witnesses this morning would venture any guess as to whether the fertility rate was going to be 1.5 or 3.0. The uncertainty of this complicates figuring out how to finance social security within the next 40 years. We are attempting to make a decision on that within the next year. I don't know how we could get any demographics at the moment that would particularly aid in solving that problem if we are as uncertain about it as we are about the fertility rate which would be an important component.

Another factor contributing to the problem of making predictions is female labor force participation. That has had large impacts in the last 4 or 5 years on employment policy and fiscal policy, but could anybody have predicted that in 1960 or 1958 or 1965 when it began to gather momentum?

Another one is the baby boom and the subsequent baby bust and the fact that we ended up with a lot of empty schools. Could anybody have predicted that in time to make any difference on the building programs and so forth?

In other words, when you had that baby boom from 1947 to 1964, it filled up the excess capacity of the schools, but the children continued to move through second, third, fourth, fifth, sixth, seventh, and eighth grades and even though the fertility rate may have been declining, there might have been justification for continuing to build because of the increase in the class size that would be faced in the next 4 or 5 years.

Well, I guess the point is here that I am being a little bit of the devil's advocate. Do you really think that we can make forecasts over a significant period of time with sufficient precision given the uncertainty that there seems to be about so many of the basic variables, like fertility or even life expectancy.

In the last 20 years life expectancy has increased from 68 to 73 years, but even more importantly we know that the population aged 75 and above has increased enormously. That has a great impact on our ability to finance medical care. The increase has probably happened due to rapid strides in medical technology. None of us have a crystal ball as to what the future of high medical technology may hold in terms of its impact on life expectancy and the size of the very aged population.

So, let's get back to the basics. How much confidence do you have that we can make forecasts that would be reliable enough to affect some of these longer term policy decisions, Dr. Morrison?

Dr. MORRISON. Let me make what is perhaps the most conservative statement warranted by present knowledge. Their record of previous forecasts gives demographers no sound basis for arguing that we have any accurate way to foretell the future course of fertility. We have been seriously in error more often than we have been on target. The stubbornly uncertain future resists precise predictions, but we cannot avoid it.

The projections we use have another purpose, however, which is to illuminate contingencies. Here, demographers can provide a technical basis for appraising alternative possibilities regarding the future. We can bring informed judgment to bear on the inherent uncertainties here.

Certain facets of population change, of course, are highly predictable because they are built into the population's age structure. The number of people of a particular age, for example, is very predictable once these people are born.

Fundamental uncertainties will persist, though, and it is not obvious to me that these uncertainties could be reduced in proportion to the research dollars expended. The judgment that is exercised here matters more. As with many questions about the future, policymakers need to perceive the future as a range of possibilities rather than a certain course that will inevitably be followed. You have to be prepared for the likelihood that this demographic context will change in unforeseen ways, and you have to be able to deal with it and to adapt to it.

Mr. **Barabba**. Mr. Stockman, I don't think we could ask the Congress to be any more proficient at projections than our large major corporations. In my own context, we try to predict what the future holds for our corporation, and we realize that there are some assumptions we make of which are not certain.

We conduct a sensitivity analysis which, in essence, is what the Census Bureau provided you this morning to tell you the range around the assumptions. Another activity that we try to do is to find indicators that can tell us which way the data assumptions are likely to move.

I think in the economic area we have done a pretty good job of allocating our statistical resources to determine which of those indicators are leading indicators and which are lagging.

In the demographic area we really have never paid a lot of attention to that because it was always a relatively straight line of projection of growth, and it wasn't until recently when the compositions started to change, that we started to look for these so-called leading indicators.

My favorite leading indicator these days is what women 18 to 24 are planning to do with their lives, because if we could ever understand that and measure it, then we would have a pretty good idea of what the fertility rate is going to be.

Now, the Census Bureau has spent some time and effort in trying to measure the attitude of young women and what they expect to do. Now, this is where we run into the conflict between the need to understand and the right to privacy.

I recall several times appearing before a congressional committee and really being berated because we were interfering with the privacy of their constituency by asking them these "embarrassing" questions. It was frustrating because we knew we were asking the right questions—the important questions—but on the other hand they were sensitive to the Government asking "private" questions. We find in our society that people do not want to have Government asking personal questions.

I think this is an issue that Congress has to understand and assume a leadership role in identifying the importance of this question to their constituents as well.

Mr. **Scheuer**. Will the witness yield for a question? Are you saying that people are sensitive to answering questions posed by a "Government" person?

Mr. **Barabba**. I would not limit it to Government in this case because we do have considerable amount of research as a private company and run into similar kinds of things.

Mr. **Scheuer**. I haven't heard people objecting to being asked a question by a Gallup poll interrogator or any of the other interrogators—Roper and so forth. Would it be wise for the Census Bureau to contract a private polling firm to get answers to these sensitive questions which people apparently find unpleasant and offensive when they are asked by a Government employee?

Mr. **Barabba**. Two things—you never hear about the Gallup or the Roper concerns because they don't explain the amount of non-response in their questions to the extent that the U.S. Census Bureau does. The Census Bureau is one of the few agencies I have ever known that not only is willing to admit that it makes an error, but it extensively documents the extent to which it does.

The response rate in many of these private or commercial polls that you spoke about would not be tolerated by the Congress. You would not accept it as reliable information. The item response error is even greater, in many instances, than the total response error.

So, I don't think it is correct to say that the American people are willing to respond to a private agency any more so than they would respond to a Government agency. I would point out that the Census Bureau in conjuction with the National Science Foundation developed a study to address this whole issue of whether a private organization can collect some kinds of information better than a Government organization. In fact both agencies entered into a contract with the University of Michigan Survey Research Center to do an operational test.

The other aspect is that the Government has gone from time to time to private organizations to collect some of this sensitive information. I believe it was the National Opinion Research Center at the University of Chicago which collected some of the initial information on fertility questions for the National Center for Health Statistics.

So the procedure to do that is in place. The effectiveness of response rates—and I haven't seen the results of any of the latest studies—tends to be that the Census Bureau gets a much higher response rate on some of these very important questions.

Mr. **Scheuer**. Mr. Zitter, would you have anything to contribute about this subject?

Mr. **Zitter**. I don't have too much to add to what Mr. Barabba just told you, but generally all the evidence points to the fact that the Census Bureau obtains much higher response rates than private industry does; but again, there are some kinds of questions that we have not felt comfortable asking and have deferred in those cases to private industry. I think what you referred to is the National Center for Health Statistics detailed survey on family planning.

The survey had some questions on family planning and birth control practices. We were asked to do the survey at the Census Bureau, and our decision at that time was to decline because of the nature of the questions; therefore, it was contracted to private industry.

Mr. **Scheuer**. Well, do you think that it is an acceptable alternative to make contractual arrangements with a commercial firm or even with a university?

Mr. **Zitter**. In many areas, private industry conducts studies for the Government and does a very good job of it. I think it depends upon the particular survey and the sample involved.

One of the advantages at the Census Bureau is that we maintain a very large national sample and for a private organization to try to duplicate that type of sample would be very expensive. I think the required size of the survey is one of the determining factors here as to whether private industry can do the job.

Again, the Bureau is not opposed to turning things over to private industry as appropriate.

Dr. **Glick**. The Bureau of the Census has expanded its questions in such areas as asking women how many children they have had and how many they expect to have. We asked those questions only of married women until recently; now we ask unmarried women also. Everybody knows that many—now 15 percent—of children are born out of wedlock, so it is not all that unusual for us to ask all women how many children they have and how many children they expect to have.

We often adopt new procedures after we assemble advisory groups to check on our plans. For example, when we make projections or introduce new survey questions, we try to assemble the best experts in the field and ask their views before we ask the questions or make the projections.

Mr. **Stockman**. I am intrigued by the suggestion that was just made. Would it be feasible for you to develop a set of leading indicators that might forecast what is going to happen with the fertility rate?

It seems to me the fertility rate is a very large variable in this whole demographic forecasting business, and until we can get a better handle on that, I don't know how much value demographic forecasting is going to have for some of these specific policy domains I was talking about.

I asked a number of the witnesses earlier whether they could assign probability factors to the three Census Bureau projections and, of course, given the nature of their agency, they would be, I guess, somewhat sensitive about doing that. But, if we had a set of indicators based on surveys of attitudes and expectations of life plans and so forth of relevant demographic groups, could that help us to get a better handle on this fertility variable and thereby give us the ability to make at least some probability analyses of which path we ought to assume is the most likely? If we don't do that, I am stuck with three different Census Bureau projections on the size of the labor force during the next 40 years that don't help me in deciding how much the real benefit level ought to increase in social security.

Mr. **Barabba**. Mr. Stockman, if you would tolerate the same level of inaccuracy in a leading indicator of demography as many of the policymakers have in economics, I think that something could be done.

[Laughter.]

Dr. **Glick**. I have been with the Census Bureau since 1939, longer than almost anybody else. During that time, business research experts have spoken to me about our projections. If we apologize for the projection's limitations they may say, "Look, they are the nearest thing to hard fact that we have to deal with. We have to make all kinds of assumptions about other softer variables than the population."

Not that population projections are perfect, but they rank pretty well compared with some other variables that have to be taken into account in business and government planning.

Mr. **Barabba**. I made too flippant of an answer to your question, Mr. Stockman, but in essence, this is one of the major problems that the Census Bureau has encountered in trying to be "responsive" and "responsible" at the same time. The Bureau is concerned about expressing an opinion about something because it has been too rigorous in its approach to come out with a reliable set of numbers that when it starts expressing opinions, as distinguished from numbers, all of a sudden those opinions could then be accepted as realistic. That doesn't preclude it from starting to address some of these other issues because many of the leading indicators that you see in an economic area are, by the way, also generated by the Census Bureau.

Mr. **Stockman**. Yes; the Census Bureau may not be the agency to do it, and I think your analogy with the leading indicator is correct. I believe the leading indicators have predicted seven of the last four recessions so that with that kind of accuracy level I can see why the Census Bureau has confidence problems.

[Laughter.]

Mr. **Stockman**. I don't think we would necessarily want to get the Census Bureau in policy or in forecasting and probability assignment. But we could develop a more detailed, more reliable information base that independent demographers could then use to shed some light on that key fertility question. If we don't, we will not get very much beyond where we are today.

Dr. **Morrison**. Let me be clear as to the nature of the uncertainty here, and I am not trying to play a semantic trick. If you ask me—or indeed any of the gentlemen at the table here—to tell you which of those three census projections is the likeliest to be realized in the future, I think each of us is prepared to give our own considered opinion, based on the existing data to which we all have access.

My choice would be the middle projection, or slightly below it. That is my answer today. What I cannot predict, however, is what my answer would be next year, based on the new information that may become available.

Mr. **Barabba**. I would also point out that the Bureau used to publish five series as I recall.

Mr. **Zitter**. Four.

Mr. **Barabba**. Four?

Mr. **Zitter**. We usually prepare an even number of series.

Mr. **Barabba**. Then we thought that four series gave too much of an alternative range, and we limited it to the three series where you are faced with two extremes and the middle projection.

Mr. **Stockman**. So there has been a narrowing which is an implicit forecast.

Mr. **Barabba**. Not necessarily. You do not have to go with any of the three. You can actually take something around the middle or toward the bottom or toward the top. The software that is designed to develop the three series can be designed to develop a fourth or a fifth and without too much difficulty.

Mr. **Zitter**. It seems, perhaps, the panel or the committee isn't aware that the projections are based on a series of questions that we ask women about how many babies they expect to have in the future, and what they expect the makeup of their family to be. These are the leading indicators, at least in theory.

The problem is that within 5 years, more than half the babies born within 2½ years are from women who are quite young. They were teenagers or perhaps only 10 or 11 years old when the survey was taken. So having these birth expectation surveys doesn't really help to understand what these children will do when they reach maturity. But, in a sense, we do have the leading indicators to which you refer.

Dr. **Espenshade**. Might I just add one or two other thoughts on the matter? This is an intriguing idea, one which I think on the surface is quite appealing, and the analogy to the economic indicators is, of course, what suggests its appeal.

In the case of the economic indicators, it seems to me that what we are trying to forecast is short-run economic activity. The kinds of questions that you are raising here concerning which of these three alternative fertility patterns is likely to materialize require that we forecast long-run demographic activity. That is something which I am not sure we can really do.

I've given some thought before to this question of demographic indicators, and one of my own favorites is an index of consumer optimism or pessimism, with regard to whether people are planning to purchase automobiles in the next year or not. This tends to correlate to some extent with whether couples would have a child next year or not.

The question of whether people will have a child next year or not relates more to short-run demographic activity. It relates to the timing of fertility behavior, but the question that you are raising is a much longer run question which relates to the total number of children. I think it is important to make this distinction between the short-run versus the long-run demographic activity.

We may have some success in anticipating the shorter run changes in demographic activity that relate to the decision of whether to have a child this year or not, but these longer run demographic problems that all of us are concerned about seem to be much more intractable to study.

Dr. **Morrison**. One further point you should understand about this, of course, is that these national statistics are only abstractions combining the experience of many individual places. In Buffalo, the population is declining; in Albequerque, it is growing very rapidly. These local manifestations are what really matters. What happens on a national scale is only of long range significance, and then probably just because of the effect it has on the national age structure rather than on whether there will be 240, 260, or 280 million people by the year 2000 or some other year.

Mr. **Stockman**. Yes, but it would affect certain national policies and programs as well as questions pertaining to provision of benefits which is a nationalized function.

Dr. **Morrison**. True, that is one area where it would have a clear effect, but many other concerns are only tangentially related to these national figures. It is at the local level where these changes are most palpable and where the most immediate political repercussions are felt.

Dr. **Espenshade**. I think I would have to disagree with that a little bit. To some extent it reflects the fact that Dr. Morrison and I have been interested in different kinds of things, but I don't think one should discount the national implications of these population trends.

The age composition as was suggested is certainly important. But I think the overall size of the population as it relates to the size of GNP is important, too, because the size of our economy has a lot to do with the amount that we import from other countries.

Mr. **Stockman**. I was going to raise that point. Here is another problem I see. We have to be able to isolate the effect of purely demographic variables from the effects of other variables.

I would disagree very strongly with the statement you made earlier that if we have a lower population growth rate, we'll have a lower aggregate GNP and therefore our imports will be lower. Forty years from now, relative prices will carry the greatest impact on the volume of imports. For example, the relative price of energy is going to be far more important over time. It will outweight or overwhelm demographic variables entirely in terms of the amount of energy consumption that takes place, the sources of it, and the import impact.

Dr. **Espenshade**. I would agree with that. In fact, I had it in my notes but forgot to mention that the size of the per capita income in the future is likely to be much more influenced by nondemographic factors than by the shape of the age distribution. How much productivity grows over the next 25 to 50 years, for example, is going to have much more impact on the size of per capita income, so I don't mean to suggest that demographic factors are overwhelming in any of these issues.

Mr. **Scheuer**. Dr. Glick, according to your testimony, marriage rates are down, divorce rates are up, separations are up, and more young people are living together without benefits of matrimony. What effect on fertility rates and other factors, will these phenomena have? I would be happy to hear from any of you.

Dr. **Glick**. I think a central factor in this situation has been the increasing employment of women. More women have gotten themselves educated to the point where they are employable, and as more women work, the birthrate has gone down. It is not a full-time job to take care of one or two children for many of the well-educated women. They would much rather leave the children in the care of someone who has put less expenditure into preparation for employment. So, as women become more economically independent they become more independent in the marriage sphere, too.

Women work over here; their husband works over there; they have different contacts. It is not like the time when some of us grew up on a farm or had parents who were shopkeepers. They had to work together in order to make the business go. The employment situation is different now, and it is not surprising that the divorce rate is higher.

It is a new situation that has to be adjusted to. Anything that can be done should be done to minimize the breaking up of marriages by getting the right people together in the first place and giving them all the encouragement——

Mr. **Scheuer**. Do you see a role for Congress there? [Laughter.] That might be an excellent service we could offer our constituents. [Laughter.]

Dr. Glick. Maybe you could offer the service to the Congressmen. [Laughter.]

Various factors are associated with the continuing trend toward a smaller family size. Accordingly, many of us would expect the future population to be on the low side of the middle projection. I think the Census Bureau's staff should always make the middle projections express the best judgment that it is able to.

We cannot be definitive; we can't give the final answer, but we can update these projections frequently the best way we can and take advantage of all the intelligence we can draw upon in the process.

Mr. Scheuer. Do you think that the percentage of women who are employed will increase?

Dr. Glick. I don't think it will increase nearly as much in the future as it has in the past. The employment of women increased as the total fertility rate went down from 3.8 children 20 years ago to 1.8 children now. It can't go down another two children, you see. It has to level off. Thus, one of the factors contributing to the increase in the employment of women is the smaller number of children to occupy their time. Of course, this is not the whole story, but it is one of the more important factors.

Mr. Stockman. I just have one comment on this. Art Buchwald suggested that we could double GNP over night if everybody would hire his neighbor's wife to do the work at home. [Laughter.]

Now, the point is how much of a real economic change has taken place here? Maybe we have just monetized the work put into our GNP accounts, the work that was being done anyway when a woman takes a job in the commercial market and then hires somebody to do some of the things at home. This adds up significantly.

The more food is packaged in the food processing industry, the more people are hired to do something she used to do. She may have her kids in a day care center or child care center and that employs somebody to do things she used to do. Has anyone ever tried to see how much real economic change has taken place as a result of the change of women's participation in the commercial market?

Dr. Glick. I don't know of a study that has zeroed in on that. It sounds intriguing.

Mr. Barabba. I guess it is just like using the GNP as you would the total population. It could be a very misleading statistic. You would probably look at the change in services as distinguished from manufacturing and the other components of national accounts. This might provide a fairly straightforward indication of where it is coming from.

Dr. Glick. In order for there to be an increase in the economy and in the hiring of extra employees, there must be greater use of natural resources and energy.

Mr. Scheuer. Dr. Glick, next month is June, and June is the great month for marriages. Can you tell us of the couples who get married next month, by the time 10 years have lapsed, how many of them will be separated or divorced, and what will the average family size be?

Dr. Glick. I have in my hand a report that Dr. Bouvier asked me to write. It says that 38 percent of the women about 30 years old—

who would have been married about 10 years—can expect their first marriage to end in divorce; about three-fourths of them would be expected to remarry; and about 44 percent of those would expect to have a re-divorce.

All together, you come up with a round figure of 40 percent of the marriages that are occurring among young adults today are likely to end in divorce.

Mr. **Scheuer.** The chances that the second marriage will survive are worse than the first marriage.

Dr. **Glick.** That is the way the numbers come out. They are not very far apart, but remember that it is a select group to begin with. They have been through a divorce already. They know how to get another divorce, and they exclude the hard core of people who are never going to get a divorce. So, the results are not too surprising to me.

Mr. **Scheuer.** Yes. Dr. Morrison, you talked about the depletion of resources and the increasing cost of commuting and how burdensome that is. Our Federal Government has had an urban renewal program for about 20 years; in fact, before I was a Congressman, I spent 10 years of my life in that program.

The Federal Government has tried to renew the central cores of our major cities. What do you see as the future prospects for that effort to rebuild cities? How do you perceive the likelihood of the flow back to the central cities, and if this is likely to happen, how will it affect minorities and the poor?

Dr. **Morrison.** Well, frankly, I am not very optimistic about the central cities of the large metropolitan areas—the ones that are now experiencing sharp population decline, like St. Louis. There has been talk about a back-to-the-cities movement—the so-called gentrification phenomenon. It has been occurring in some parts of some cities. Indeed, gentrification always is taking place somewhere. The question is: Has it become more widespread, or will it in the future? I don't think there is any solid evidence in the affirmative, when we consider all cities. Moreover, I don't think the Federal Government has done, or could do, very much to counteract the powerful forces causing the outflow of population from these cities.

This is not to deny the significant changes in the housing market here in the District and a few other cities. There is a genuine revival in many parts of the District. This is a case of an area that is recession proof and where large numbers of white collar jobs are created. These ingredients combine to turn around decline in many parts of a city. But such ingredients are absent in most declining cities.

Mr. **Scheuer.** I ask unanimous consent that we hold the record open for 2 weeks for some of the additional information that has been promised. I also ask that the witnesses accept some further written questions because a rollcall vote is going to require us to leave. I hope that the staff will stay and ask a few other questions.

Mr. **Stockman.** Fine. We would like to continue. I have a number of questions myself, but we are going to have a sequence of votes now that may take up to an hour, and so I am afraid we are going to have to break off the formal session. I want to thank all of you for appearing. Your statements and insights have been most valuable and will be very helpful to us, and I only wish we could continue, but the House floor beckons our attendance. Thank you.

Mr. **Scheuer**. Thank you very much.

Dr. **Williams**. Dr. Morrison, your work has included a study of the effects of demographic change on school enrollments, a topic which this committee will consider on May 25. Could you comment on the problems which geographic distribution of the population pose for predicting school enrollments at the local level?

Dr. **Morrison**. Yes; the national unevenness in the population's age composition, of course, has a direct bearing on enrollments nationally, but the manifestations of these imbalances at the local scale are exceedingly diverse.

This diversity arises from the fact that the people who move from one locality to another are heavily concentrated in the young adult ages. An area that gains a hundred migrants, then, gains disporportionate numbers of families in their twenties and thirties—families with children or who will soon bear them.

The typical manifestation of this effect is that the areas which grow rapidly for several years acquire an uncommonly large fraction of their population in the school-age ranges. Areas which decline for a period of time come to have a relatively smaller proportion of their population in the school ages.

The redistribution of population, then, tends to concentrate or thin out the school-age population, depending on whether an area is growing or declining.

Dr. **Williams**. Thank you. Another question that you addressed briefly in your testimony is the question of governmental influences on resource distribution. Would you say that the availability of welfare or other public services is an important determinant of migration, particularly to our cities?

Dr. **Morrison**. From the evidence that I have seen, the welfare-seeking migrant appears to be a myth. There is a serious misconception about the motivation of low-income migrants to move to large cities. It is widely believed that such persons go to places like New York City as welfare-seekers, drawn by generous public-assistance allowances. A recent Rand study on this question, however, found that needy newcomers to New York start using the welfare system only gradually, not immediately. The delay is more easily interpreted as due to discouragement in finding work after the migrant arrives than to prior motivation for moving to New York deliberately to claim benefits. Findings from other independent studies tend to corroborate this point.

If anything, receipt of public assistance seems to reduce the migration of poor families. In other words, welfare recipients may pile up in cities not because they are drawn by benefits but because benefits deter them from leaving in search of jobs elsewhere.

Dr. **Williams**. Thank you. Mr. Barabba, in your testimony, you refer to many of the changes that are occurring in our society as a result of changing age composition. Now, as a marketing expert, could you comment on two things. First, over the next decade do you foresee any major changes in the buying habits of our population that might result from changes in age distribution; and second, using demographics as your only variable, that is with everying else being equal, what advice would you give to someone wishing to invest in the stock market? [Laughter.]

Mr. **Barabba**. I think I am going to stick with the marketing expert and not the stock market expert. Related to the buying habits, I think some of the things identified in the testimony are really quite relevant. As Dr. Glick has pointed out so many times, the size of the average household will get smaller, but the number of households will increase. To form a new household requires certain durable goods. Thus, we may expect an increase in the purchasing of durable goods in the future, or at least a status quo even though we may have a declining population. That is a potential that could happen. Therefore, as we look at a declining population, it does not necessarily mean a declining amount of purchasing, if we are, in fact, creating additional economic units in our society—the household.

The other aspect of impact on purchasing arises from the accumulation of wealth by individuals. With more wealth, people are more free to move. I concur with Dr. Morrison that the opportunities to move are greater and that social pressures to stay in one place appear to be diminishing. My judgment tells me that purchasing activities which are related to moving would also increase considerably.

Dr. **Williams**. Thank you very much and please feel free to go catch your plane.

Mr. **Barabba**. First, I am going to go read the stock market report. [Laughter.]

Dr. **Williams**. Dr. Espenshade, Mr. Barabba said in his written testimony that first births generate more economic demand than subsequent births. Now, you have done extensive studies on the costs of children. Based on those studies and on your testimony today, would you agree that as the proportion of first births goes up, the net stimulus of births to the economy will increase?

Dr. **Espenshade**. I would agree with the introductory portion of your question which is that there are capital outlays associated with children per se, regardless of whether one has 1 child, or 2 children, or 3 children. There is the whole accoutrement of things purchased when rearranging one's household to accommodate children—from playpens to baby carriages, and so forth.

It is also true that as fertility rates decline, the proportion of first births rises. I don't necessarily believe that that would be a stimulus to the economy. What tends to stimulate the economy is the arrival of the first birth itself.

I am at a bit of a crossroads as to how to answer the question. In some of the other research that I have done, I did find that expenditures on first children outweighed those on subsequent children.

Dr. **Williams**. Isn't it true one of the reasons for the depression of the 1930's was the inadequate stimulus of the population growth to the economy? Could you in general comment on this whole stagnationist argument?

Dr. **Espenshade**. Well, at the time, it was felt not only in this country, but even more so in Europe, that population growth was necessary for a healthy economy. The stagnation argument to which you are referring basically posited that as there was a slowdown in the rate of population growth, there was a slowdown in the rate of consumption, which would mean that with goods piling up in warehouses, there would be a smaller incentive for businesses to invest. They wouldn't need as many workers, the unemployment rate would rise, and the overall level of investment would fall, so that eventually the economy would end up at the point of less-than-full-employment equilibrium.

That feeling was especially pervasive in Europe, but it had its advocates in this country as well. So the argument at the time was that a slowdown in the birth rate was in part responsible for high rates of unemployment.

I think the general consensus of the economic demographic community, in hindsight anyway, is that the causal mechanism was just the reverse. The reason the birth rate was low was because of the economic insecurity that permeated the economy rather than vice versa.

Dr. **Williams**. Thank you. Although there may not be a strong relationship between population growth and economic growth, as your testimony documents, certain sectors of our economy might be either crippled or greatly benefit from a slower rate of growth of population. What policies do you think that the Government should pursue to ease these sectoral shifts?

Dr. **Espenshade**. I think the key word here for government, as well as for industry, is flexibility. We have already seen that some corporations in response to changing demographic trends are adjusting their product mix. They are remaining flexible.

I am thinking back in particular to a series I think that Newsweek carried about a year ago when reference was made to the Gerber baby products, for example. They are now marketing baby food for elderly people.

Another example is the Johnson & Johnson Co. which is now trying to market its shampoo for young and old adults. So, there is already evidence that corporations are sensitive and are responding to demographic trends, and the way they are able to do that is by remaining flexible and having a diversified product mix.

There has been some speculation that the labor force itself might be less flexible as population growth slows—less flexible not only in a geographic sense but also less flexible in an occupational sense.

Here one of the points that has been raised is the need, perhaps the accelerated need, for life-long learning. It is important to recognize that education does not necessarily have to stop when one graduates from college or university, but that education can be a life-long process not only in an informal sense but also in a formal sense. So, there may be a need to focus more attention on continuing education programs so that workers can move out of one occupation, out of one industry into another, and thereby provide additional flexibility in the labor force.

Dr. **Williams**. Thank you. I believe Dr. Bouvier has a few questions.

Dr. **Bouvier**. I would like to ask a couple of questions to fill in some of the holes. Dr. Glick, many of us are very concerned about the dramatic changes that have occurred in the nature of the family. This is reflected in the decision of the Census Bureau to get away from the term "Head of Household" in 1980 and use "Householder" instead. There are two things I am curious about. What will be the exact procedure in 1980, and will it be possible to make comparisons over time now that you have made the change?

Mr. GLICK. The 1980 census procedure to which you refer is as follows: list the people who live in the household beginning with the person or one of the persons in whose name the home is owned or rented; if the respondent chooses to list the wife as the first person, then all other members of the household will be recorded in terms of their relationship to the wife.

We expect to publish the data in that form, whereas in the past we had always switched to make the husband the head of the household. But we have had much antipathy to the concept head of household on the grounds that it implies an hierarchical arrangement. The husband is primary and the wife is always secondary. We have pretested this new format. It seems to work in the field, and it seems to have met with no opposition on the part of those who have been sensitive to the former procedure

This is a field operation that we have been speaking about. When it comes to publication, that is something else. We have to have some word to use for this "reference person," the first person who is listed. We might conceivably use the term "reference person" in some publications, but it is a term we can't use in the field because too many people wouldn't understand what the word means. Currently, we are considering the term "householder" as the term most likely to be used in publication.

I suspect that we will be inclined to publish few statistics in the future which depend on the use of this term householder. We are more likely to show data for husband/wife families and show the characteristics of the husband or the wife in order to match statistics in past censuses.

Dr. BOUVIER. Thank you. Dr. Vinovskis, do you have some questions?

Dr. VINOVSKIS. Just two quick questions. In trying to provide useful information for policymakers we often have a tradeoff in the type of data we can collect. For instance, the Census Bureau tends to collect only cross sectional survey data at a particular point in time. Other studies, such as the Institute for Social Research's Panel Study of 5,000 Families, do try to provide longitudinal analysis. How do you feel about the allocation of funds in terms of these studies? Do we need more longitudinal studies like the 5,000 families study or do we need more cross sectional studies? How should we go about making that decision?

Dr. MORRISON. The difference in information content between the cross sectional and the longitudinal studies is immense. For purposes of disentangling the underlying causation of changes in fertility, household structure and composition, and the like, longitudinal data is far better. It adds new dimensions to the kind of information presently available through large cross sectional data regularly collected by the Census Bureau.

There are a number of ongoing longitudinal surveys that have yielded enormous dividends of knowledge about demographic phenomena. Included here would be the University of Michigan's Panel Study of Income Dynamics to which you refer (also known as the 5,000 Families Study), the Parnes National Longitudinal Survey, the National Longitudinal Study of High School Seniors, underway since 1972, and others. These data represent investments of at least $20 million of Federal funds. They are reaping huge payoffs in terms of secondary analyses by scholars throughout the country who can use them to discern causation.

Dr. **Espenshade**. I think to some extent it really depends on the kinds of questions we are trying to answer. Let me just take one example. Suppose that one is concerned with revising the consumer price index periodically, and you want to take stock periodically of how buying habits have changed. Then, a consumer expenditure survey every 5 or 10 years may be adequate, especially if you don't think that buying patterns are changing that rapidly.

For other kinds of questions, as Dr. Morrison answered, we may like to have panel data. That would be a time series of cross sections. This would be particularly important if one is trying to understand the causes for the baby boom and the baby bust.

I would generally agree that the panel data are a much richer source of information. Ideally, we would like to know everything about everybody since they were born, but this runs into all kinds of difficulties.

Let me just make one observation, something that has become more apparent in my recent experiences. I have detected a tendency even to be dissatisfied in some cases with panel data because frequently individual researchers will say:

> Yes, I recognize that there is the Michigan Panel Study. There are other panel studies, but for the particular kinds of questions that I am interested in studying, they don't have the right variables. So, let me spend a half a million dollars and go out and collect a new set of data.

I guess my general enthusiasm for panel data is greater than that for cross-sectional data, but this really has to be qualified in a number of ways. I think it depends largely on the kinds of questions that one is trying to study.

Dr. **Glick**. Just a footnote to what has been said about the benefits of a longitudinal study. These benefits can be approximated by asking retrospective questions. Every 4 years the Census Bureau has asked people about what we call their marital and fertility history. When did you get married? When were your children born? When did you get divorced? When did you get remarried? And so on.

The researcher doesn't have to follow people through life to do that. Questions can be asked that provide such factual data on a retrospective basis. What this approach lacks, of course, is the corresponding socioeconomic level—their incomes and their occupations—when each event happened. It does give you something; but, it doesn't give you everything.

Dr. **Vinovskis**. One final question. Mr. Plotkin testified on how the Census Bureau decided to drop the question on the place of birth of parents from the 1980 census. Dr. Glick, Dr. Morrison, and Dr. Espenshade, as consumers of this type of information, what is your reaction to that decision?

Dr. **Glick**. I supported the change because I have sat in on the advisory committee meetings where almost invariably the members said they would like to have the person's identification with an ethnic group regardless of when the person or the person's ancestors came to this country.

Of course, the new approach yields a different type of statistics, but I believe the right decision has been made.

Dr. **Vinovskis**. I would also like to ask Dr. Morrision and Dr. Espenshade what are their specific reactions to that decision?

Dr. **Morrison**. Well, I don't have any particularly strong feelings one way or another. Speaking only for myself, it will not give me any problems with using census data.

Dr. **Espenshade**. I would have to respond in a similar vein. My own research interests don't fall into those categories that would be affected really one way or another by the question.

Dr. **Vinovskis**. What about the members of the Population Association of America of which I think Dr. Morrison is on the board of directors. I'm not looking for just your personal research interests, but those of demographers in general. Do you think that this is a serious problem for demographers, or is it one that we can live with quite easily?

Dr. **Morrison**. I think it could be put in the category of one of the many minor annoyances that demographers live with. The Census Bureau, as Mr. Zitter said, bridged the gap and has prepared a way for us to connect the old information with the new.

I am much more concerned about other kinds of issues that come out of the privacy concerns. This is not one of the major ones, I don't think.

Dr. **Glick**. I hope that the people who record more than one ancestry in the 1980 census will have that information coded instead of only one ancestry as in past censuses. Such persons have difficulty in deciding which one to record. Where there are mixtures of ancestry, the data can be enriched by finding out what those combinations are.

Dr. **Vinovskis**. Thank you.

Dr. **Williams**. Thank you all very much. The hearing is adjourned.

[Whereupon, the hearing was concluded at 1:12 p.m.]

[Additional questions asked of the witnesses by the chairman follow:]

ADDITIONAL QUESTIONS ASKED OF MR. MANUEL D. PLOTKIN BY THE CHAIRMAN

Question 1. In our last week of hearings we will be looking at issues concerning the geographical distribution of the population. Both the Census Bureau and the Bureau of Economic Analysis (BEA) make projections of State populations.

What is the relationship between BEA and Census?

Is it necessary to have two agencies making projections of the same population?

Answer. Both the Census Bureau and the Bureau of Economic Analysis do make projections of State populations. The projections by the two agencies are developed using quite different methods and underlying assumptions and produce different types of data which prove useful to different audiences.

In conjunction with the national projections reports, the Census Bureau has also periodically issued population projections for States. State projections reports have been a part of the regular Current Population Reports, Series P-25 since 1952. In this program, the Bureau has at times presented State projections for individuals by age and sex, for numbers of households, for school-age population, and for voting age population. At the present time, the Bureau has just completed processing a set of State projections by age, race, and sex for every 5 years between 1975 and 2000. These projections should be published by September 1978.

The methodology used in this forthcoming set of State projections is the Bureau's well-known demographically-based cohort-component method. The cohort-component approach has many advantages. It uses data inputs on the basic demographic process—fertility, mortality, and migration—assumptions about which can be easily related to theoretical developments and observed trends. In the forthcoming projection, the fertility and mortality assumptions are tied into the national projections of fertility and mortality trends and then adjusted for traditional differences between States.

Internal migration of the civilian non-college population is the most volatile component of State population projections, having changed markedly in the past years. To take this into account three different migration assumptions were used in the current projections: no interstate migration, continuation of 1965–75 age-sex-race specific migration rates, and continuation of 1970–75 age-sex-race specific migration rates. Each assumption generated a different State population projection series, any of which might be selected by a given user as best for his purposes.

The cohort-component model also permits specific adjustments for special circumstances affecting only specific subdivisions of the population. In the current set of State projections, for example, immigrants to the U.S., persons entering and leaving college, and the military population are each treated separately. Special procedures are also implemented to make the State projections consistent with the coverage of the population attained in the 1970 decennial census.

As a result of the use of the cohort-component method, the results of these projections by the Census Bureau are quite different from those of the Bureau of Economic Analysis. The output of the Census model is data by age, sex, and race for each State which facilitates their use in planning applications related to specific age groups. Consequently these numbers have been of use to the Department of Health, Education, and Welfare for providing projections of the population 65 and over for use in administering the Title XVI (Hill-Burton) program.

Since 1964 the Bureau of Economic Analysis has also produced State population projections as a byproduct of their employment and earnings projections for States. Their methodology does not consider the components of fertility, mortality, and migration explicitly but rather uses historical trends in labor force participation rates applied to projected employment to get total population. These total population figures have been used by the Water Resources Council in water resource planning.

While the existence of multiple sets of population projections is useful for planning for different alternative courses of action, the Department of Commerce recognizes that the mandated use of conflicting projections for planning or funding purposes is not a satisfactory situation. Moreover, the technical accuracy of State projections might well be improved by an interactive demographic-economic system which provides the best aspects of the two systems. The melding of these two very different procedures will not be easy and may well require a major research program. A number of steps are currently being taken in this direction.

Approximately two years ago, a special task force was formed from among the membership of our Federal-State Cooperative Program for Local Population Estimates (FSCP) to address the issue of population projections. On April 12, 1978, members of the task force met in Atlanta, Georgia, with representatives of the Census Bureau and the Bureau of Economic Analysis. The overwhelming sentiment expressed by representatives of the 15 States represented at that meeting was in favor of a Federal-State cooperative arrangement for projections that would handle projections in a manner similar to the operation of the FSCP currently with respect to population estimates. Mr. Walter P. Hollmann, Director of the Population Research Unit in the California State Department of Finance, was elected chairman of the task force and was charged with the responsibility of contacting State agencies in the fifty States to determine their interest in forming a more formal Federal-State cooperative program including both the Census Bureau and the Bureau of Economic Analysis.

In addition to the activities of this task force, several other steps toward coordination have been made. The Census Bureau, the American Statistical Association (ASA), and the National Science Foundation (NSF) jointly conducted a recent conference on methods of merging economic and demographic factors in projecting migration. The Bureau of Economic Analysis, of course, was a primary participant in the conference. ASA-NSF involvement in merging these activities is expected to continue with the appointment and support of a visiting research scholar at the Census Bureau to work on projections methodology linking the work of BEA and the Census Bureau.

In the meantime staff discussions between the Bureau of Economic Analysis and the Census Bureau are continuing in an effort to exchange ideas leading to a merger of the two sets of projections. The coordination of the projection activities within the Commerce Department is viewed very seriously by the Department. Recently Dr. Courtney Slater, Chief Economist, instructed the Office of Federal Statistical Policy and Standards to oversee the reconciliation of the subnational projections methodology used by the Census Bureau and the Bureau of Economic

Analysis. This office has brought this matter to the attention of both the Federal Committee on Statistical Methodology and the Statistical Policy Coordinating Committee. Both groups are now investigating the matter of federally generated State population projections.

Question 2. The President's Reorganization Plan No. 1 transferred from the Office of Management and Budget to the Secretary of Commerce the responsibility for oversight of Federal statistical activities.

Would you outline for the Committee the major functions of the newly created Office of Federal Statistical Policy and Standards?

Answer. The Office of Federal Statistical Policy and Standards will be responsible for assuring the integrity, accuracy, and timeliness of Federal statistics. As indicated by its title, the Office will be concerned with the development and coordination of statistical policy and the development and implementation of statistical standards and guidelines. The statistical policy function includes the determination of present and future statistical requirements; the establishment of methodologies and the definition of concepts to satisfy statistical needs; an examination of the feasibility of alternative methodological approaches; a scrutinization of priorities to balance needs and demands; and the coordination, implementation, and evaluation of plans. For additional information, see the two attached documents.

Question 3. Do you foresee any problems or conflicts arising from the fact that the Office and both the Census Bureau and BEA, over which the Office has oversight responsibility, are all located under the Chief Economist?

Answer. We do not foresee any problems or conflicts arising from the oversight of the Chief Economist of the Department of Commerce over Census, BEA, and OFSPS. The functions of each organizational unit are clear and distinct, and the arrangement offers, in fact, the potential for improved coordination of statistical, analytical, and policy development responsibilities.

U.S. Department of Commerce

Office of Federal Statistical Policy and Standards

A Government-wide Perspective on Statistical Programs

U.S. DEPARTMENT OF COMMERCE

Juanita M. Kreps, Secretary

Courtenay M. Slater, Chief Economist

Joseph W. Duncan, Chief Statistician and Director
Office of Federal Statistical Policy and Standards
George E. Hall
Deputy Director for Social Statistics
Gaylord Worden
Deputy Director for Economic Statistics

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This publication contains information concerning the transfer of responsibility for Federal statistical policy development and coordination from the Office of Management and Budget to a new office in the Department of Commerce—the Office of Federal Statistical Policy and Standards. Discussed briefly in the following pages are: the basic authority for the new office, mechanisms for Government-wide coordination, and programs now underway.

Courtenay M. Slater

Courtenay M. Slater
Chief Economist

The Office of Federal Statistical Policy and Standards

This booklet provides an overview of the new Office of Federal Statistical Policy and Standards, which was created in the Department of Commerce as a successor to the Statistical Policy Division in the Office of Management and Budget. In accordance with Executive Order No. 12013 effective October 9, 1977 the new Office is responsible for statistical policy development and implementation functions that have been transferred by the President from OMB to the Department of Commerce.

The Executive order redelegates to the Secretary of Commerce authority granted to the President by Section 103 of the Budget and Accounting Procedures Act of 1950. The act authorizes and directs the President (and, in the future, the Secretary of Commerce, acting on his behalf)

> "... to develop programs and to issue regulations and orders for the improved gathering, compiling, analyzing, publishing, and disseminating of statistical information for any purpose by the various agencies in the executive branch of the Government. Such regulations and orders shall be adhered to by such agencies."

A Government-wide Perspective

In general, the broad authority of the new Office extends to all economic and social statistics throughout the Federal Government. The Government-wide perspective of the Office was underscored by Secretary of Commerce Juanita M. Kraps in October 1977. The Secretary stated:

> "The new Office will retain its independent status vis-a-vis all Federal statistical agencies. The Office will conduct objective analyses of individual statistical programs; these analyses will provide a basis for recommendations for improvement. I have also directed the Office to undertake a review of all cooperative arrangements among statistical agencies, including those within the Department of Commerce."

Basic Authorities Include Data Improvement, Budget Review

The responsibilities set forth in the Budget and Accounting Procedures Act of 1950 are quite broad. Specific activities of the Office include setting standards for statistical programs and recommending projects for data improvement.

It is the responsibility of the Office to advise the Departments and the Office of Management and Budget on budget requests concerning statistical programs. As stated in Section 7 of the Executive order:

> "The Secretary of Commerce shall provide advice to the Director of the Office of Management and Budget with respect to the review and preparation of that portion of the annual Budget of the U.S. Government dealing with the gathering, interpreting, and disseminating of statistics and statistical information."

The new Office also has responsibility for providing U.S. statistical information to international organizations. This authority is derived from Executive Order No. 10033, signed in February 1949. Section 1 of the order, as redelegated, states that the Secretary:

> ". . . (a) shall determine with the concurrence of the Secretary of State, what statistical information shall be provided in response to official requests received by the United States Government from any intergovernmental organization of which this country is a member, and (b) shall determine which Federal executive agency or agencies shall prepare the statistical information thus to be provided. . . ."

The Secretary of Commerce and the Director of the Office of Management and Budget have further agreed to cooperate in the execution of additional functions that are essential to the coordination of the Federal Statistical System. Among the functions of the Office of Federal Statistical Policy and Standards are: The review of legislative proposals in order to assess their potential impact on statistical programs; participation in the reports clearance process to ensure that administrative records are utilized appropriately in statistical programs; and analysis of statistical data collection instruments.

Mechanisms for Coordination

In recent years, statistical policy development has depended upon coordination among the various Departments and agencies of the Federal Government. However, a formal mechanism for collaboration at the Cabinet level was lacking. In response to that gap in the Federal Statistical System, the Statistical Policy Coordination Committee, a Cabinet committee, was established by Executive Order No. 12013. According to Section 8 (c) of the order:

> "The Committee shall advise and assist the President with respect to the improvement, development, and coordination of Federal and other statistical services, and shall perform such other related duties as the President may prescribe."

As a Cabinet committee chaired by the Secretary of Commerce, the Statistical Policy Coordination Committee will make recommendations concerning major statistical policy decisions

Also to be established is the Interagency Committee on Statistical Policy and Programs consisting of the heads of major statistical collection or analytical units. A number of interagency committees on specific statistical policy questions also exist or will be established. These will be coordinated by the Office of Federal Statistical Policy and Standards.

The establishment of the new Office has entailed a review of all existing interagency committees. A detailed policy statement concerning the review is available. It offers a description of the scope and membership of a variety of committees that are important to statistical coordination. Active committees at the present time are shown in Table I. Future reviews of these committees will be conducted on an annual basis, and special committees will be created as needed.

Programs for Implementation

Activities of the Office of Federal Statistical Policy and Standards will include continued work on "A Framework for Planning U.S. Federal Statistics, 1978-1989;" the development of appropriate circulars; the design and implementation of statistical standards; cooperation in the President's Reorganization Project; and the continuation of a publication program to reach as many users of statistics as possible. Each of these activities is described in greater detail below.

"A Framework for Planning U.S. Federal Statistics, 1978-1989"

A high priority has been assigned to the program known as "A Framework for Planning U.S. Federal Statistics, 1978-1989." Initiated by the Statistical Policy Division of OMB in 1975, the program aims to develop a clear assessment of Federal statistical needs, methods to cope with those needs, and recommendations for the improvement of the Federal Statistical System. The process was initiated with a series of meetings in 1975 among individual statistical agencies who participated in a task force to formulate a program for preparing an overall statistical framework. Issue papers were developed in 1976 by the staff of the Statistical Policy Division as the first step in a comprehensive attempt to record agency and user concerns about gaps in the Federal Statistical System and to offer solutions. Public review and comments will continue until early 1978 when the completed draft will present an integrated review of pertinent statistical policy issues. Topics covered in the Framework are listed in Appendix A.

4

Statistical Policy Handbook

The OMB circular process was the means by which the Statistical Policy Division in the Office of Management and Budget implemented many standards. These circulars, having been transferred to the Department of Commerce, will provide the basis for an integrated statistical policy handbook. The handbook will be the controlling mechanism for statistical policies and procedures. Incorporated in it will be the standards presently embodied in three OMB circulars:

OMB Circular No. A-39, "Providing of Statistical Information to Intergovernmental Organizations"

OMB Circular No. A-46, "Standards and Guidelines for Federal Statistics"

OMB Circular No. A-91, "Prompt Compilation and Release of Statistical Information."

The Statistical Policy Handbook also will include the charters of interagency committees. It will be updated as individual regulations and guidelines are issued. Initial topics to be covered are listed in Appendix B.

Statistical Standards

The issuance of statistical standards is an important mechanism for ensuring comparability of data across Federal agencies. The Office of Federal Statistical Policy and Standards will be responsible for the improvement and enforcement of statistical standards to maintain credibility and quality and to meet goals of timeliness and accuracy. The first publication of the new Office will be the *Standard Occupational Classification Manual* which provides a consistent framework for occupational definitions as they relate to census statistics and manpower planning programs. The Manual may also be used by specific agencies, such as the Office of Education, in its analysis of supply and demand for educational manpower or the Public Health Service in its analysis of health manpower. Also, a supplement to the *1972 Standard Industrial Classification Manual* will be issued by the Office in late 1977.

The Federal Committee on Statistical Methodology is preparing a series of reports which will be issued as working papers. The first report will focus on statistics for the allocation of funds.

In addition, the Office will provide standards for the timely release of economic series, designate and define Standard Metropolitan Statistical Areas, and engage in current work pertaining to commodities and international standards. As circumstances may demand, new standards will be issued by the Office.

General Statistical Improvement

The Statistical Improvement Project being undertaken by the President's Reorganization Project is concerned with streamlining the Federal Statistical System and increasing its responsiveness to user needs. The Office of Federal Statistical Policy and Standards will work closely with this important project. Work on "A Framework for Planning U.S. Federal Statistics, 1978-1989," will proceed in coordination with the Statistical Improvement Project.

Publication Program

A large number of people, both in and outside of Government, have a continuing interest in new developments in statistical procedures and in the development of new statistical programs. The need for prompt communication on these topics will be met by the Office through an extensive publication program. These publications include a monthly publication, *Statistical Reporter*, which includes articles on important developments as well as descriptions of new publications, new statistical series, and related developments. Currently, *Statistical Reporter* is an ongoing mechanism for reporting on the progress of the project to develop "A Framework for Planning U.S. Federal Statistics, 1978-1989." Other publications include:

Enterprise Standard Industrial Classification Manual, 1974
Federal Statistical Directory, 1976
Federal Statistics: Coordination, Standards, and Guidelines, 1975
Household Survey Manual, 1969
Social Indicators, 1976
Standard Industrial Classification Manual, 1972
Standard Metropolitan Statistical Areas, 1975
Standard Occupational Classification Manual, 1977
Statistical Services of the United States Government, 1975

APPENDIX A
TOPICAL OUTLINE
"A Framework for Planning U.S. Federal Statistics, 1978-1989"

Section I: The Nature of the Framework

Section II: The Organization of U.S. Federal Statistics

Section III: The State of Statistics by Functional Area

- A. Labor Statistics
- B. Price Statistics
- C. Production and Distribution Statistics
- D. Construction Statistics
- E. National Economic Accounts
- F. Energy Statistics
- G. Environmental Statistics
- H. Health Statistics
- I. Population Statistics
- J. Education Statistics
- K. Criminal Justice Statistics
- L. Income Maintenance and Welfare Statistics
- M. Housing and Community Development Statistics
- N. Income, Wealth, and Consumption Statistics
- O. Agricultural Statistics
- P. Transportation Statistics
- Q. Science and Technology Statistics
- R. Financial Statistics

Section IV: Crosscutting Issues

- A. Longitudinal Surveys
- B. Multipurpose Sample Vehicles
- C. Social Indicators and Social Accounts
- D. Civil Rights Data
- E. Professional Staff Training
- F. Confidentiality
- G. Standard Industrial Directory
- H. Reporting Burden
- I. Longrun Economic Growth Models
- J. International Statistics and Technical Assistance
- K. Interagency (reimbursable) Funding
- L. User Access-Data Banks
- M. A Program of Standards Development
- N. The Federal-State Cooperative Systems of Data Collection
- O. Statistical Methodology

Section V: Evolution of the Framework

APPENDIX B
Topics to be Included in the Statistical Policy Handbook to be Issued by the Office of Federal Statistical Policy and Standards of the Department of Commerce

Procedures for:

Providing of Statistical Information to International Governmental Organizations

Cooperating with State and Local Governments to Coordinate and Improve Information Systems

Prompt Compilation and Release of Statistical Information

Standards and Guidelines for Federal Statistics including:

- Standards for Statistical Surveys
- Standards for the Publication of Statistics
- Standard Metropolitan Statistical Areas Titles and Definitions
- Standard Federal Administrative Regions
- Standard Classification of Fields of Science and Engineering
- Race and Ethnic Standards for Federal Statistics and Administrative Reporting
- Definitions of Poverty for Statistical Purposes
- Guidelines for the Release of Principal Current Economic Indicators
- Standard Data Source of Total Population Used in Distributing Federal Benefits
- Provision and Use of Standard Data for Statistical Estimates of Labor Force and Unemployment
- Treatment of Transition Period for Data Published on a Fiscal Year Basis

TABLE I
Interagency Committees Created by the Office of Federal Statistical Policy and Standards of the Department of Commerce

Federal Agency Council on the 1980 Census
Federal Committee on International Statistics
Federal Committee on Standard Metropolitan Statistical Areas
Federal Committee on Statistical Methodology
Federal Interagency Council on Energy Information

Interagency Committee on Balance of Payments Statistics
Interagency Committee on Commodity Classification
Interagency Committee on Financial Statistics
Interagency Committee on GNP Statistics
Interagency Committee on Housing Statistics
Interagency Committee on Income Distribution
Interagency Committee on Labor Statistics
Interagency Committee on Land Use Data
Interagency Committee on Price Statistics
Interagency Committee on Transportation Statistics

Technical Committee on Industrial Classification
Technical Committee on Occupational Classification
Technical Committee on Standard Industrial Directory

Ad Hoc Committee on Toxic Substance Data

Office of Federal Statistical Policy and Standards: Historical Background

The establishment of the Office of Federal Statistical Policy and Standards is the most recent in a series of efforts to coordinate Federal statistical activities:

Interdepartmental Statistical Committee

Established by Executive Order No 937, September 10, 1908, it was composed of one member from each of 10 agencies, designated by the President.

Central Bureau of Planning and Statistics

Established by the War Industries Board in 1918, it instituted measures to improve the efficiency and quality of the data gathering activities, assembled statistics bearing on the war effort, prepared a catalog of Government statistics, advised agencies on statistical methods, promoted adoption of standard definitions, and served as a clearing house of statistical information.

Bureau of Efficiency

In existence from 1916 to 1933, it was concerned with statistical coordination for only a brief period (1919-22).

Federal Statistics Board

Established in April 1931 to study the collection, compilation, and use of statistics and to recommend economies and means for fuller utilization of statistics and statistical personnel.

Central Statistical Board

Established as an independent agency in 1933 to review plans for the tabulation and classification of statistics needed for purposes of the National Industrial Recovery Act and to promote the coordination and improvement of the statistical services involved. It was given a specific statutory mandate for a 5-year period by Public Law 219, July 25, 1935. Its function and operating methods were basically similar to those now exercised by the Statistical Policy Division.

Division of Statistical Standards

Reorganization Plan I under the Reorganization Act of 1939 transferred the Central Statistical Board to the Bureau of the Budget, where it became the Division of Statistical Standards. The Federal Reports Act of 1942 broadened its scope to cover collection of information generally; made mandatory the review of questionnaires prior to issuance; and made explicit the responsibility of minimizing cost and burden on respondents while maximizing the usefulness of statistics. In a reorganization of the Bureau in April 1952, the name of the Division was changed to Office of Statistical Standards.

Statistical Policy Division

Continuing earlier mandates, but with broader responsibility for statistical policy, the Division was renamed the Office of Statistical Policy in 1969. A further internal reorganization of the Office of Management and Budget resulted in a name change to the Statistical Policy Division on November 15, 1971 to parallel other divisions with similar levels of responsibility.

Office of Federal Statistical Policy and Standards

Established in October 1977 by Executive Order, the Office is the focus of this booklet.

U.S. Department of Commerce Reprinted from Statistical Reporter, October 1977

THE ESTABLISHMENT OF THE OFFICE OF FEDERAL STATISTICAL POLICY AND STANDARDS

RUTH BELL *

Intern, Office of Federal Statistical Policy and Standards

The Department of Commerce seal on the cover of this issue of *Statistical Reporter* reflects the transfer by President Carter of Federal statistical policy functions from the Office of Management and Budget to the U.S. Department of Commerce effective October 9. Undoubtedly, the statistical community shares significant interest in this particular phase of governmental reorganization. This article aims to inform readers of *Statistical Reporter* about such issues as the reason for the transfer, the means by which it was executed, and the delegation of statistical policy responsibilities to the new Office of Federal Statistical Policy and Standards.

On July 15, 1977, President Carter Announced Reorganization Plan Number 1. Designed to streamline the Executive Office of the President, the Plan included the proposal that certain statistical policy responsibilities be assigned to the Department of Commerce, rather than the Office of Management and Budget. This transfer was deemed to be compatible with Presidential plans for overall governmental reorganization, as well as with the traditional role of the Commerce Department in the Federal statistical system. In her statement to the American Statistical Association on August 14, 1977, Secretary of Commerce Juanita M. Kreps enthusiastically accepted this new assignment:

> ". . .I welcome the new responsibilities which the President has asked me to assume. These new responsibilities for statistical policy development are consistent with the Department of Commerce's longstanding contribution to the Federal Statistical System. I intend to see that they are carried out in a manner which will preserve and strengthen the Federal Statistical System."

In order to implement the relevant provisions of Reorganization Plan Number 1, President Carter signed on October 7, 1977 Executive Order No. 12013, entitled "Relating to the Transfer of Certain Statistical Policy Functions." (The details of the Executive order can be found on pages 6 and 7. It appeared in the *Federal Register* for October 12, 1977, Vol. 42, No. 197.)

The statutory basis for Commerce's new authority is contained in Section 103 of the Budget and Accounting Procedures Act of 1950. Section 103 authorizes and directs the President

> ". . .to develop programs and to issue regulations and orders for the improved gathering, compiling, analyzing, publishing, and disseminating of statistical information for any purpose by the various agencies in the executive branch of the Government. Such regulations and orders shall be adhered to by such agencies."

By virtue of his power of redelegation, the President has thus vested these responsibilities in the Secretary of Commerce who will act on his behalf.

Within the Department of Commerce the statistical policy function will be carried out by the new Office of Federal Statistical Policy and Standards. The Office will be headed by Joseph W. Duncan, who served as Deputy Associate Director of the Office of Management and Budget for Statistical Policy. His new title will be Chief Statistician and Director, Office of Federal

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*Currently enrolled in the graduate program in public administration at the University of Massachusetts at Amherst.

Statistical Policy and Standards. The Office will report to Courtenay M. Slater, Chief Economist for the Department of Commerce.

The government-wide and objective nature of the statistical policy function to be exercised by the new Office was underscored by Secretary Kreps in her statement to the American Statistical Association in August 1977:

> "In establishing this new office, I intend to make it clear that it is expected to retain an independent status *vis-a-vis* all Federal statistical agencies. Its goal will be to provide objective analyses of needed improvements in individual statistical programs so that these programs will make more significant contributions to the full set of governmental and non-governmental needs. Under the authority which will be delegated to me, I will instruct this office to undertake objective analyses of cooperative arrangements of all government agencies, including those within the Department of Commerce. Guidelines will be established to make it clear that the Federal statistical policy function, even though located in the Commerce Department, will review Commerce statistical initiatives in the same fashion as it would review those of any other statistical agency."

The Office of Federal Statistical Policy and Standards will be responsible for assuring the integrity, accuracy, and timeliness of Federal statistics. As indicated by its title, the Office will be concerned with the development and coordination of statistical policy and the development and implementation of statistical standards and guidelines. The statistical policy function includes the determination of present and future statistical requirements; the establishment of methodologies and the definition of concepts to satisfy statistical needs; an examination of the feasibility of alternative methodological approaches; a scrutinization of priorities to balance needs and demands; and the coordination, implementation, and evaluation of plans.

The development and enforcement of statistical standards and guidelines ensures that statistical data are uniform and comparable. This role is especially significant given the decentralized nature of the Federal statistical system and the diversification of user needs. Soon to be issued by the new Office is the *Standard Occupational Classification Manual*, which contains a current set of occupational definitions. The Manual is designed to coordinate and standardize the definitions to census statistics and manpower planning programs. In late 1977, the Office also plans to issue a Supplement to the 1972 *Standard Industrial Classification Manual*. Additional standards and guidelines will be issued as the need arises.

The Office of Federal Statistical Policy and Standards will supervise procedures for the timely release of statistical information to the public (Circular No. A–91). The new Office also has responsibility for providing U.S. data to international organizations such as the United Nations, the Economic Commission for Europe, and the Organization for Economic Cooperation and Development. The authority for this liaison function on statistical matters is derived from Executive Order No. 10033, signed in February 1949. (See appendix for the text of this order.)

The core staff of the Office of Federal Statistical Policy and Standards are former members of the Statistical Policy Division of the Office of Management and Budget. The staff is geographically located at 2001 S Street, N.W. The mailing address is

Office of Federal Statistical Policy
and Standards
U.S. Department of Commerce
Washington, D.C. 20230

The names and business phone numbers of the staff are listed below:

Name	*Telephone Number*
Darling, Elisabeth J.	673-7959
Duncan, Joseph W.	673-7959
Edmonds, Margie V.	673-7956
Evinger, Suzann K.	673-7962
Gonzalez, Maria E.	673-7953
Haber, Lawrence D.	673-7953
Hall, George E.	673-7950
Johnston, Denis F.	673-7953
Lowry, Helen	673-7965
Lynn, Margaret D.	673-7953
Peterson, Milo O.	673-7956
Rodgers, Gilbert M.	673-7962
Sunderhauf, Milo B.	673-7950
Wallman, Katherine K.	673-7950
Worden, Gaylord E.	673-7956

In the immediate future, the first priority of the staff of the Office of Federal Statistical Policy and Standards will be the completion and preparation for publication of "A Framework for Planning U.S. Federal Statistics, 1978–1989," a document which is familiar to readers of *Statistical Reporter*. With regard to the framework, Secretary Kreps stated: "My staff has reviewed this project, and I will ask the new Office to give priority to completing this project so that it can serve as the foundation for subsequent planning and decisionmaking." By functional area, the assignments of the staff in relation to the topics in the Framework are as follows:

General	
Organization of U.S. Federal Statistics	Duncan
Nature of Statistical Programs in a Dynamic, Complex Society	Duncan/Hall /Worden
Functional Areas	
Agricultural statistics	Worden
Construction statistics	Rodgers
Criminal justice statistics	Hall
Education statistics	Wallman
Energy statistics	Rodgers
Environmental statistics	Rodgers
Financial statistics	Worden
Health statistics	Haber
Housing and community development	Haber
Income maintenance and welfare statistics	Sunderhauf
Income, wealth, and consumption	Sunderhauf
Labor statistics	Johnston
National economic accounts	Worden
Population statistics	Hall
Price statistics	Johnston
Production and distribution statistics	Peterson
Science and technology	Johnston
Transportation	Worden
Crosscutting Issues	
Civil rights data	Wallman
Confidentiality	Haber
Federal-State cooperative systems of data collection	Wallman
Interagency (reimbursable) funding	Sunderhauf
International statistics and technical assistance	Duncan
Longitudinal surveys	Hall
Longrun growth models	Duncan
Multipurpose sample vehicles	Hall
Professional staff training	Wallman
Program of standards development	Peterson
Reporting burden	Duncan
Social indicators and social accounts	Johnston
Standard Industrial Directory	Peterson
Statistical methodology	Gonzalez
User access—data banks	Worden

The Office of Federal Statistical Policy and Standards has established and now chairs several interagency committees. Their cooperative efforts will contribute to progress in such areas as standards development and the design of integrated statistical programs. The committees also serve as forums for the exchange of and feedback of technical and substantive information. The reciprocity practiced by the interagency committees is conducive to the resolution of conflicts between and among agencies and the attainment of consensus among member agencies. The present committees chaired by the Office of Federal Statistical Policy and Standards are:

Federal Agency Council on the 1980 Census
Federal Committee on International Statistics
Federal Committee on Standard Metropolitan Statistical Areas
Federal Committee on Statistical Methodology
Federal Interagency Council on Energy Information

Interagency Committee on Balance of Payments Statistics
Interagency Committee on Commodity Classification
Interagency Committee on Financial Statistics
Interagency Committee on GNP Statistics
Interagency Committee on Housing Statistics
Interagency Committee on Income Distribution
Interagency Committee on Labor Statistics
Interagency Committee on Land Use Data
Interagency Committee on Price Statistics
International Committee on Transportation Statistics

Technical Committee on Industrial Classification
Technical Committee on Occupational Classification
Technical Committee on Standard Industrial Directory

Ad Hoc Committee on Toxic Substance Data

All of the above are chartered committees subject to annual review by the Office of Federal Statistical Policy and Standards.

An unprecedented attempt to formally coordinate statistical policy efforts at the Cabinet level is exemplified in the Statistical Policy

Coordination Committee (SPCC). Chaired by the Secretary of Commerce, the SPCC is instructed by the Executive order to "... advise and assist the President with respect to the improvement, development, and coordination of Federal and other statistical services. ..." Secretary Kreps has voiced her firm belief that the process of developing statistical policy will be strengthened by such consultation at two levels.

Many standards and guidelines were implemented by the Statistical Policy Division through the circular process. Having been transferred intact to the Department of Commerce, these circulars constitute the subject matter of the OFSPS Statistical Policy Handbook. Statistical policies and procedures will in this way be communicated to those affected by them and additions will be incorporated in the handbook upon their promulgation. The titles of the circulars to be initially included in the handbook are:

Circular No. A-39, "Providing of Statistical Information to Intergovernmental Organizations"
Circular No. A-46, "Standards and Guidelines for Federal Statistics"
Circular No. A-91, "Prompt Compilation and Release of Statistical Information."

The responsibility for reviewing paperwork burdens in connection with statistical programs and clearing of forms under the Federal Reports Act of 1942 remain with the Office of Management and Budget.

Appendix

Reprinted below is the text of Executive Order Nos. 10253 and 10033. The responsibilities and authorities contained in these orders have been delegated to the Secretary of Commerce along with the transfer of the statistical policy function to the Department of Commerce. Executive Order No. 10253 of June 11, 1951 implements Section 103 of the Budget and Accounting Procedures Act of 1950 and specifies the objectives to be sought. Executive Order No. 10033 of February 8, 1949 sets forth the regulations whereby the Office of Federal Statistical Policy and Standards will handle requests from international organizations for U.S. data. The text of these Executive orders follows.

EXECUTIVE ORDER NO. 10253
As Amended by Executive Order No. 12013

Providing for the Improvement of the Work of Federal Executive Agencies With Respect to Statistical Information

By virtue of the authority vested in me by Section 103 of the Budget and Accounting Procedures Act of 1950 (31 U.S.C. 18b), and as President of the United States, and in order to carry out the purposes of said section, it is hereby ordered as follows:

Section 1. The Secretary of Commerce (hereinafter referred to as the Secretary) shall develop programs, and issue regulations and orders, for the improved gathering, compiling, analyzing, publishing and disseminating of statistical information for any purpose by the various agencies in the executive branch of the Federal Government.

Sec. 2. In order to carry out the provisions of Section 1 of this order, the Secretary shall maintain a continuing study for the improvement of the statistical work of the agencies in the executive branch of the Federal Government with a view to obtaining the maximum benefit from the funds and facilities available for such work, giving due consideration to the constantly changing character of the various needs for statistical information both within and without the Government and, where the statistical work is primarily concerned with operating programs, giving due consideration to administrative needs, statutory requirements, and the needs involved in the development of administrative and legislative recommendations. The Secretary, either upon his own initiative or upon the request of any such agency, shall (a) provide for the interchange of information calculated to improve statistical work, (b) make appropriate arrangements for improving statistical work involving relationships between two or more agencies, and (c) assist the agencies, by other means, to improve their statistical work.

Sec. 3. The following shall be included among the objectives sought in carrying out the provisions of Section 1 hereof:

(a) To achieve an adequate program of statistical work in the agencies of the executive branch, in relation to over-all needs for statistical information, including the filling of gaps and overcoming of weaknesses in presently available statistical information.

(b) To achieve the most effective use of resources available for statistical work by the agencies, in relation to over-all needs.

(c) To minimize the burden upon those furnishing statistical data needed by the various Federal agencies.

(d) To improve the reliability and timeliness of statistical information.

Editor's Note.—The Department of Agriculture and the National Center for Health Statistics have announced a reorganization. The newly established Department of Energy will have a statistical office. Details on these reorganizations will appear in the next issue.

(e) To achieve maximum comparability among the several statistical series and studies.

(f) To improve the presentation of statistical information and of explanations regarding these sources and reliability of such information, and regarding the limitations on the uses that can appropriately be made of it.

Sec. 4. Regulations and orders issued pursuant to Section 1 hereof shall be signed by the Secretary. When so signed, such regulations and orders shall require no further approval and shall be adhered to by all agencies in the executive branch. Any such regulation or order may pertain to a single agency, a group of agencies, or all agencies in the executive branch.

Sec. 5. In the development of programs and the preparation of regulations and orders for issuance pursuant to Section 1 hereof, the Secretary shall consult Federal agencies whose activities will be substantially affected, and may consult non-Federal groups to the extent he finds it necessary to carry out the purposes of this order.

Sec. 6. The authority outlined in this order is in addition to and not in substitution for the existing authority of the Secretary, or of the Department of Commerce, with respect to statistical and reporting activities. To the extent, however, that this order conflicts with any previous Executive order affecting statistical or reporting activities, the provisions of this order shall control.

Sec. 7. Nothing in this Executive order shall be construed to apply to the obtaining or releasing of information by the Bureau of Internal Revenue, the Comptroller of the Currency, the Bureau of the Public Debt, the Bureau of Accounts, and the Division of Foreign Assets Control of the Treasury Department, or to the obtaining of any Federal bank supervisory agency of reports and information from banks as provided or authorized by law and in the proper performance of such agency's functions in its supervisory capacity.

Sec. 8. The performance of the functions vested in the Secretary by this Order shall be subject to any authority or responsibility vested in the Director of the Office of Management and Budget, including Chapter 35 of Title 44 of the United States Code (the Federal Reports Act).

EXECUTIVE ORDER NO. 10033
As Amended by Executive Order No. 12013

Regulations Governing the Providing of Statistical Information to Intergovernmental Organizations

WHEREAS the United Nations and other intergovernmental organizations of which the United States is a member have need for statistical information which can be supplied by the Government of the United States; and

WHEREAS the burden imposed on this Government in connection with providing such information to such organizations should be the minimum compatible with adequacy of information; and

WHEREAS a systematic procedure for furnishing such information will conserve effort and improve the quality and comparability of the data furnished:

NOW, THEREFORE, by virtue of the authority vested in me by the Constitution and the statutes, including section 8 of the Bretton Woods Agreements Act (59 Stat. 515; 22 U.S.C. 286f), and as President of the United States, it is hereby ordered as follows:

Section 1. Except as provided in section 2 hereof, the Secretary of Commerce, hereinafter referred to as the Secretary, (a) shall determine, with the concurrence of the Secretary of State, what statistical information shall be provided in response to official requests received by the United States Government from any intergovernmental organization of which this country is a member, and (b) shall determine which Federal executive agency or agencies shall prepare the statistical information thus to be provided. The statistical information so prepared shall be transmitted to the requesting intergovernmental organization through established channels by the Secretary of State or by any Federal executive agency now or hereafter authorized by the Secretary of State to transmit such information.

Sec. 2. (a) The National Advisory Council on International Monetary and Financial Problems, hereinafter referred to as the National Advisory Council, shall determine, after consultation with the Secretary, what information is essential in order that the United States Government may comply with official requests for information received from the International Monetary Fund or the International Bank for Reconstruction and Development.

(b) The Secretary shall determine which Federal executive agency or agencies shall collect or make available information found essential under section 2 (a) hereof.

(c) In the collection of information pursuant to a determination made by the Secretary under section 2 (b) hereof in response to a request under Article VIII, section 5, of the Articles of Agreement of the International Monetary Fund, the authority conferred on the President by section 8 of the Bretton Woods Agreements Act to require any person to furnish such information, by subpoena or otherwise, may be exercised by each of the following-named agencies:

Department of Agriculture
Department of Commerce
Department of the Interior
Department of Labor
Department of the Treasury
Board of Governors of the Federal Reserve System
Federal Communications Commission
Federal Deposit Insurance Corporation
Federal Power Commission
Federal Trade Commission
Interstate Commerce Commission
Securities and Exchange Commission
United States Maritime Commission
United States Tariff Commission

(d) The information collected or made available under section 2 of this order shall be submitted to the National Advisory Council for review and for presentation to the said Fund or Bank.

(e) As used in this order, the word "person" means an individual, partnership, corporation, or association.

Sec. 3. The Secretary's determination of any matter under section 1 or section 2 (b) of this order shall be made after consulting appropriate Federal executive agencies and giving due consideration to any responsibility now exercised by any of them in relation to an intergovernmental organization.

Sec. 4. This order shall not be construed to authorize the Director or the National Advisory Council to provide, or to require any Federal executive agency to provide, to an intergovernmental organization (a) information during any period of time when the agency having primary responsibility for security of the specified information declares that it must be withheld from the intergovernmental organization in the interest of military security, or (b) information which any Federal executive agency is required by law to maintain on a confidential basis.

Sec. 5. The Secretary and the National Advisory Council are authorized to prescribe such regulations as may be necessary to carry out their respective responsibilities under this order.

Sec. 6. To the extent that this order conflicts with any previous Executive order, the provisions of this order shall control.

Sec. 7. The performance of the functions vested in the Secretary by this Order shall be subject to any authority or responsibility vested in the Director of the Office of Management and Budget, including Chapter 35 of Title 44 of the United States Code (the Federal Reports Act-

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On October 7, 1977, President Carter signed Executive Order No. 12013 which transfers responsibility for the setting of statistical policy from the Director of the Office of Management and Budget to the Secretary of Commerce. The following paragraphs describe, in general terms, the impact of the various sections of the Executive order. The actual Executive order is reprinted at the conclusion of the general discussion.

Section 1—The basic authority for establishing statistical policy is Section 103 of the Budget and Accounting Procedures Act of 1950 which directs the President to:

> *"... develop programs and to issue regulations and orders for the improved gathering, compiling, analyzing, publishing, and disseminating of statistical information for any purpose by the various agencies in the executive branch of the Government. Such regulations and orders shall be adhered to by such agencies."*

In 1970, when the Office of Management and Budget was established, this authority was delegated to the Director of the Office. Section 1 of this Executive Order terminates that delegation.

Section 2—The provisions of Section 103 were implemented by Executive Order No. 10253 on June 11, 1951. This section transfers the delegations to the Secretary of Commerce. Further, it provides that the Federal Reports Act authority remains with the Office of Management and Budget.

Section 3—Under previous authorities, the statistical policy functions have included responsibility for coordinating with international agencies. Executive Order No. 10033, which was first issued on February 8, 1949, is redelegated to the Secretary of Commerce.

Section 4—In 1976, the International Investment Survey Act required certain activities, including some tasks of interagency statistical coordination. These statistical policy functions have been transferred to the Secretary of Commerce.

Section 5—This section provides for the transfer of funds and staff to carry out the assigned functions.

Section 6—This section provides procedures for the above transfers.

Section 7—The previous functions of the Statistical Policy Division of the Office of Management and Budget in reviewing statistical budgets and priorities have been transferred to the Secretary of Commerce.

Section 8—The President has established the Statistical Policy Coordination Committee which includes all Cabinet members, the Director of the Office of Management and Budget, the Chairman of the Council of Economic Advisers and the Chairman of the Board of Governors of the Federal Reserve System. The Secretary of Commerce is designated as the Chairman of the Committee. All agencies are requested to provide assistance and information to this Committee which has overall oversight responsibilities for Federal statistics.

Section 9—This section transfers existing circulars and regulations concerning statistical policy from the Office of Management and Budget to the Department of Commerce.

EXECUTIVE ORDER NO. 12013

Relating to the Transfer of Certain Statistical Policy Functions

By virtue of the authority vested in me by the Constitution and statutes of the United States of America, including Reorganization Plan No. 2 of 1970 (5 U.S.C. App. II), Section 202 of the Budget and Accounting Procedures Act of 1950 (31 U.S.C. 581c), and Section 301 of Title 3 of the United States Code, and as President of the United States of America, in order to transfer certain functions from the Director of the Office of Management and Budget to the Secretary of Commerce and for other purposes, it is hereby ordered as follows:

Section 1. Section 1 of Executive Order No. 11541 of July 1, 1970, is amended by adding thereto the following new subsection:

"(c) The delegation to the Director of the Office of Management and Budget, pursuant to subsection (a) of this Section, of the functions vested in the Director of the Bureau of the Budget by Section 103 of the Budget and Accounting Procedures Act of 1950 (31 U.S.C. 18b and subsequently transferred to the President by Part I of Reorganization Plan No. 2 of 1970 (5 U.S.C. App. II) is terminated on October 9, 1977."

Sec. 2. Executive Order No. 10253 of June 11, 1951 is amended as follows:

(a) "Director of the Bureau of the Budget" is deleted in Section 1 and "Secretary of Commerce" is substituted.

(b) "Director" is deleted wherever it appears in Sections 1, 2, 4, 5, and 6, and "Secretary" is substituted therefor.

(c) "Bureau of the Budget" is deleted in Section 6 and "Department of Commerce" is substituted.

(d) A new Section 8 is added as follows:

"Sec. 8. The performance of the functions vested in the Secretary by this Order shall be subject to any authority or responsibility vested in the Director of the Office of Management and Budget, including Chapter 35 of Title 44 of the United States Code (the Federal Reports Act).".

Sec. 3. Executive Order No. 10033, as amended, is further amended as follows:

(a) "Director of the Bureau of the Budget" is deleted in Section 1 and "Secretary of Commerce" is substituted.

(b) "Director" is deleted wherever it appears in Sections 1, 2(a), 2(b), 2(c), 3, 4, and 5 and "Secretary" is substituted therefor.

(c) A new Section 7 is added as follows:

"Sec. 7. The performance of the functions vested in the Secretary by this Order shall be subject to any authority or responsibility vested in the Director of the Office of Management and Budget, including Chapter 35 of Title 44 of the United States Code (the Federal Reports Act)."

Sec. 4. Section 4 of Executive Order No. 11961 of January 19, 1977, is amended by deleting—

"the Council on International Economic Policy shall perform the function of making periodic reports to the Committees of the Congress as set forth in Section 4 (a) (3) of the Act"

and substituting therefor—

"the Secretary of Commerce shall perform the functions set forth in Sections 4 (a) (3) and 5 (c) of the Act".

Sec. 5. The records, property, personnel, and unexpended balances of appropriations, available or to be made available, which relate to the functions transferred or reassigned from the Director of the Office of Management and Budget to the Secretary of Commerce by the delegations made in this Order, are hereby transferred to the Secretary of Commerce.

Sec. 6. The Director of the Office of Management and Budget shall make such determinations, issue such orders, and take all steps necessary or appropriate to ensure or effectuate the transfer or reassignments provided by this Order, including the transfer of funds, records, property, and personnel.

Sec. 7. The Secretary of Commerce shall provide advice to the Director of the Office of Management and Budget with respect to the review and preparation of that portion of the annual Budget of the U.S. Government dealing with the gathering, interpreting, and disseminating of statistics and statistical information.

Sec. 8. (a) There is hereby established the Statistical Policy Coordination Committee, hereinafter referred to as the Committee, which shall be composed of the following members, and such other heads of Executive agencies as the President may designate:

(1) The Secretary of Commerce, who shall be the Chairman.

(2) The Secretary of State.

(3) The Secretary of the Treasury.

(4) The Secretary of Defense.

(5) The Attorney General.

(6) The Secretary of the Interior.

(7) The Secretary of Agriculture.

(8) The Secretary of Labor.

(9) The Secretary of Health, Education, and Welfare.

(10) The Secretary of Housing and Urban Development.

(11) The Secretary of Transportation.

(12) The Secretary of Energy.

(13) The Chairman, Council of Economic Advisers.

(14) The Director of the Office of Management and Budget.

(15) The Chairman, Board of Governors of the Federal Reserve System is invited to be a member.

(b) The Chairman may designate any other member to act as Chairman during the absence of the Chairman. Each member of the Committee may designate an alternate to serve whenever the regular member is unable to attend any meeting. The Chairman may invite the heads of other Executive agencies or their alternates to participate in Committee deliberations whenever matters which affect the interests of such agencies are to be considered.

(c) The Committee shall advise and assist the President with respect to the improvement, development, and coordination of Federal and other statistical services, and shall perform such other related duties as the President may prescribe.

(d) The Secretary of Commerce, to the extent permitted by law, shall provide such administrative support and such funds as may be necessary to support the functions of the Committee.

(e) Executive agencies shall, to the extent permitted by law, provide such information and assistance as the Committee or the Chairman may request to assist in carrying out the functions of the Committee.

Sec. 9. Any rules, regulations, orders, directives, circulars, or other actions taken pursuant to the functions transferred or reassigned from the Director of the Office of Management and Budget to the Secretary of Commerce by the delegations made in this Order, shall remain in effect until amended, modified, or revoked pursuant to the delegations made in this Order.

Sec. 10. This Order shall be effective October 9, 1977.

JIMMY CARTER

THE WHITE HOUSE
October 7, 1977

Question 4. At the May 23 hearing, Congressman Stockman requested information on policy-related correlates of the three series of population projections, such as projected changes under the different series in the school-age population and its relative size to the rest of the population. Could you provide this to the Committee, as well as the same information on the retirement-age population?

Answer. In answer to Congressman Stockman's request for data showing some policy-related correlated of the three series of national population projections, we have prepared sets of tables showing projected changes in the school-age population and the retirement-age population over the 50 years.

In Tables 1, 2, and 3 we present data from each of the three series for the population of various school ages—primary school ages (5–13), secondary school ages (14–17), and college ages (18–21). The data provided give the estimated population as of July 1, 1976 and the projected population for every five years between 1980 and 2025 both in absolute terms and as a percentage of the population. We have provided data on the numerical and percentage changes in these populations.

Each series of the projections give a somewhat different picture of school enrollment but let me point out some of the most interesting trends projected under the Series II assumptions in Table 2. The most notable fact is that each of the three school age groups is going to go through cycles in which the population declines for 10 or 15 years, rises for another 10 years, and then declines again for 10 to 15 years, and finally rises again. Thus, the primary school ages can expect declines between now and 1985, marked gains between 1985 and 1995, further declines from 1995 to 2010, and finally gains after 2010. These same trends will impact upon the secondary school population and college age population about 5 and 10 years after they affect the primary ages. For schools, this implies the need for mechanisms which permit the flexibility to meet these alternate boom and bust cycles.

Tables 4, 5, and 6 present data for the population of approximate retirement ages (65 and over) for each of the three projection series. Again data are provided on the estimated population as of July 1, 1976 and the projected population for every five years between 1980 and 2025 as well as data on changes in these populations. In addition we have presented the projected number of persons 65 and over per 100 persons aged 16 to 64. This figure may supply some indication of the demographic strain on the Social Security System as requested by Congressman Stockman.

Again let me point out a few trends from the Series II projections (Table 5). On July 1, 1977 persons 65 and over represented 10.8 percent of the total U.S. population. This proportion would rise slowly to 12.4 percent by 1995 and then remain fairly stable for a few years until it starts to rise again about 2010. In the subsequent 15 years the percentage of the total population 65 and over will rise markedly from 12.7 percent to 17.2 percent as the "baby boom" generation moves into the 65 and over category. It is worth noting that the 1975–80 period was one of rapid percentage increase in the population 65 and over (11.2 percent). In the next couple of decades the percentage increases in the population will be much slower reaching only 1.3 percent in the 1995–2000 period. By 2015–2020 however, the percentage increases will be back up to 14.1 and the increase in terms of absolute numbers will be over twice the 1975–80 value.

Perhaps the most useful ratio for providing a simple measure of the effect of demographic trends on the Social Security System is the ratio of the U.S. population roughly of beneficiary ages (65 and over) to the population in age groups that contribute to Social Security (16–64). Under Series II this ratio would rise from 17.1 per 100 in 1977 to 19.7 per 100 by 1955. The ratio will decline somewhat to 19.3 in 2010 but by 2015 it will rise to 21.7 and to 28.2 by 2025. Such a marked increase in the ratio of beneficiary age groups to contributor age groups in the 15 years between 2010 and 2025 would seem from a demographic viewpoint to imply a strain on the Social Security System. A more comprehensive analysis of these trends would require a complete actuarial review which I would defer to the actuarial experts in the Social Security Administration.

I hope that these data can be of some use to the committee in its work. We have also sent reproductions of the charts on age structure used during my testimony to Dr. Bouvier of your staff. If you care to submit a more detailed request in terms of specific age groups, other rations, or charts, we shall be glad to supply additional data.

Table 1.

Estimates and Projections of the School Age Population

Series I (High Series)

(Numbers in thousands. As of July 1. Includes Armed Forces Overseas)

	Total Population	Population In Selected Age Groups: 5-13 years old (Primary School Ages)	14-17 years old (Secondary School Ages)	18-21 years old (College Ages)
Population				
1975	213,559	33,440	16,934	16,484
1977	216,817	32,227	16,783	16,956
1980	224,066	30,197	15,763	17,117
1985	238,878	31,012	14,392	15,442
1990	254,715	38,591	12,771	14,507
1995	269,384	43,995	16,609	13,248
2000	282,837	44,725	19,698	17,692
2005	297,600	43,745	20,513	20,268
2010	315,2[illegible]8	45,417	19,865	20,728
2015	334,[illegible]	50,784	19,918	19,998
2020	354,108	56,172	22,127	20,462
2025	373,053	58,767	24,976	22,999
Percent of Population				
1975	...	15.7	7.9	7.7
1977	...	14.9	7.7	7.8
1980	...	13.5	7.0	7.6
1985	...	13.0	6.0	6.5
1990	...	15.2	5.0	5.7
1995	...	16.3	6.2	4.9
2000	...	15.8	7.0	6.3
2005	...	14.7	6.9	6.8
2010	...	14.4	6.3	6.6
2015	...	15.2	6.0	6.0
2020	...	15.9	6.2	5.8
2025	...	15.8	6.7	6.2
Change in Population				
1975-1980	10,507	-3,243	-1,171	633
1980-1985	14,812	815	-1,371	-1,675
1985-1990	15,837	7,579	-1,621	-935
1990-1995	14,669	5,404	3,838	-1,259
1995-2000	13,453	730	3,089	4,444
2000-2005	14,763	-980	815	2,576
2005-2010	17,648	1,672	-648	460
2010-2015	19,460	5,367	53	-730
2015-2020	19,400	5,388	2,209	464
2020-2025	18,945	2,595	2,849	2,537
Percent Change in Population				
1975-1980	4.9	-9.7	-6.9	3.8
1980-1985	6.6	2.7	-8.7	-9.8
1985-1990	6.6	24.4	-11.3	-6.1
1990-1995	5.8	14.0	30.1	-8.7
1995-2000	5.0	1.7	18.6	33.5
2000-2005	5.2	-2.2	4.1	14.[illegible]
2005-2010	5.9	3.8	-3.2	2.3
2010-2015	6.2	11.8	0.3	-3.5
2015-2020	5.8	10.6	11.1	2.3
2020-2025	5.4	4.6	12.9	12.4

Table 2.

Estimates and Projections of the School Age Population

Series II (Middle Series)

(Numbers in thousands. As of July 1. Includes Armed Forces Overseas)

	Total Population	5-13 years old (Primary School Ages)	14-17 years old (Secondary School Ages)	18-21 years old (College Ages)
Population				
1975	213,559	33,440	16,934	16,484
1977	216,817	32,227	16,783	16,956
1980	222,159	30,197	15,763	17,117
1985	232,880	29,098	14,392	15,442
1990	243,513	32,568	12,771	14,507
1995	252,750	35,392	14,226	12,995
2000	260,378	35,080	16,045	14,990
2005	267,603	33,542	16,180	16,388
2010	275,335	33,067	15,439	16,319
2015	283,164	34,517	14,883	15,503
2020	290,115	36,225	15,396	15,137
2025	295,742	36,639	16,356	15,833
Percent of Population				
1975	...	15.7	7.9	7.7
1977	...	14.9	7.7	7.8
1980	...	13.6	7.1	7.7
1985	...	12.5	6.2	6.6
1990	...	13.4	5.2	6.0
1995	...	14.0	5.6	5.1
2000	...	13.5	6.2	5.8
2005	...	12.5	6.0	6.1
2010	...	12.0	5.6	5.9
2015	...	12.2	5.3	5.5
2020	...	12.5	5.3	5.2
2025	...	12.4	5.5	5.4
Change in Population				
1975-1980	8,600	-3,243	-1,171	633
1980-1985	10,721	-1,099	-1,371	-1,675
1985-1990	10,633	3,470	-1,621	-935
1990-1995	9,237	2,824	1,455	-1,512
1995-2000	7,628	-312	1,819	1,995
2000-2005	7,225	-1,538	135	1,398
2005-2010	7,732	-475	-741	-69
2010-2015	7,829	1,450	-556	-816
2015-2020	6,951	1,708	513	-366
2020-2025	5,627	414	960	696
Percent Change in Population				
1975-1980	4.0	-9.7	-6.9	3.8
1980-1985	4.8	-3.6	-8.7	-9.8
1985-1990	4.6	11.9	-11.3	-6.1
1990-1995	3.8	8.7	11.4	10.4
1995-2000	3.0	-0.9	12.8	15.4
2000-2005	2.8	-4.4	0.8	9.3
2005-2010	2.9	-1.4	-4.6	0.4
2010-2015	2.8	4.4	-3.6	5.0
2015-2020	2.5	4.9	3.4	2.4
2020-2025	1.9	1.1	6.2	4.6

Table 3.

Estimates and Projections of the School Age Population

Series III (Low Series)

(Numbers in thousands. As of July 1. Includes Armed Forces Overseas)

	Total Population	Population In Selected Age Groups		
		5-13 years old (Primary School Ages)	14-17 years old (Secondary School Ages)	18-21 years old (College Ages)
Population				
1975	213,559	33,440	16,934	16,484
1977	216,817	32,227	16,783	16,956
1980	220,732	30,197	15,763	17,117
1985	228,879	27,665	14,392	15,442
1990	236,264	28,546	12,771	14,507
1995	241,973	30,007	12,417	12,848
2000	245,876	28,915	13,831	13,006
2005	248,631	26,972	13,433	14,019
2010	250,892	25,540	12,557	13,498
2015	252,548	25,315	11,718	12,578
2020	253,011	25,489	11,497	11,837
2025	251,915	25,016	11,669	11,740
Percent of Population				
1975	...	15.7	7.9	7.7
1977	...	14.9	7.7	7.8
1980	...	13.7	7.1	7.8
1985	...	12.1	6.3	6.7
1990	...	12.1	5.4	6.1
1995	...	12.4	5.1	5.3
2000	...	11.8	5.6	5.3
2005	...	10.8	5.4	5.6
2010	...	10.2	5.0	5.4
2015	...	10.0	4.6	5.0
2020	...	10.1	4.5	4.7
2025	...	9.9	4.6	4.7
Change in Population				
1975-1980	7,173	-3,243	-1,171	633
1980-1985	8,147	-2,532	-1,371	-1,675
1985-1990	7,385	881	-1,621	-935
1990-1995	5,709	1,461	-354	-1,659
1995-2000	3,903	-1,092	1,414	158
2000-2005	2,755	-1,943	-398	1,013
2005-2010	2,261	-1,432	-876	-521
2010-2015	1,656	-255	-839	-920
2015-2020	463	174	-2[illegible]	-741
2020-2025	-1,096	-473	172	-97
Percent Change in Population				
1975-1980	3.4	-9.7	-6.9	3.8
1980-1985	3.7	-8.4	-8.7	-9.8
1985-1990	3.2	3.2	-11.3	-6.1
1990-1995	2.4	5.1	-2.8	-11.4
1995-2000	1.6	-3.6	11.4	1.2
2000-2005	1.1	-6.7	-2.9	7.8
2005-2010	0.9	-5.3	-6.5	-3.7
2010-2015	0.7	-1.0	-6.7	-6.8
2015-2020	0.2	0.7	-1.9	-5.9
2020-2025	-0.4	-1.9	1.5	-0.8

TABLE 4: ESTIMATES AND PROJECTIONS OF THE POPULATION IN WORKING AND RETIREMENT AGES

(Series I - High Series)

(Numbers in thousands. As of July 1. Including Armed Forces Overseas.)

	Total population	Population in Selected Age Groups: 16-64 years old (working ages)	Population in Selected Age Groups: 65 years and over (retirement ages)	Number of persons 65 years and over per 100 persons 16-64 years old
Population				
1975	213,559	133,304	22,420	16.8
1977	216,817	137,515	23,494	17.1
1980	224,066	143,408	24,927	17.4
1985	238,878	150,302	27,305	18.2
1990	254,715	155,258	29,824	19.2
1995	269,384	161,014	31,401	19.5
2000	282,837	172,586	31,822	18.4
2005	297,600	185,546	32,436	17.5
2010	315,248	195,977	34,837	17.8
2015	334,708	202,683	39,519	[illegible]
2020	354,108	209,082	45,102	21.6
2025	373,053	217,656	50,920	[illegible]
Percent of Population				
1975	....	62.4	10.5	....
1977	....	63.4	10.8	....
1980	....	64.0	11.1	....
1985	....	62.9	11.4	....
1990	....	61.0	11.7	....
1995	....	59.8	11.7	....
2000	....	61.0	11.3	....
2005	....	62.3	10.9	....
2010	....	62.2	11.1	....
2015	....	60.6	11.8	....
2020	....	59.0	12.7	....
2025	....	58.3	13.6	....
Change in Population				
1975-1980	10,507	[illegible]	2,507	....
1980-1985	14,812	6,894	2,378	....
1985-1990	15,837	4,956	2,519	....
1990-1995	14,669	5,756	1,577	....
1995-2000	13,453	11,572	421	....
2000-2005	14,763	12,960	614	....
2005-2010	17,648	10,431	2,401	....
2010-2015	19,460	6,706	4,682	....
2015-2020	19,400	6,399	5,583	....
2020-2025	18,945	8,574	5,818	....
Percent Change in Population				
1975-1980	4.9	7.6	11.2	....
1980-1985	6.6	4.8	9.5	....
1985-1990	6.6	3.3	9.2	....
1990-1995	5.8	3.7	5.3	....
1995-2000	5.0	7.2	1.3	....
2000-2005	5.2	7.5	1.9	....
2005-2010	5.9	5.6	7.4	....
2010-2015	6.2	3.4	13.4	....
2015-2020	5.8	3.2	14.1	....
2020-2025	5.4	4.1	12.9	....

TABLE 5: ESTIMATES AND PROJECTIONS OF THE POPULATION IN WORKING AND RETIREMENT AGES

Series II (Middle Series)

(Numbers in thousands. As of July 1. Including Armed Forces Overseas.)

	Total population	Population in Selected Age Groups: 16-64 years old (working ages)	Population in Selected Age Groups: 65 years and over (retirement ages)	Number of persons 65 years and over per 100 persons 16-64 years old
Population				
1975	213,559	133,304	22,420	16.8
1977	216,817	137,515	23,494	17.1
1980	222,159	143,408	24,927	17.4
1985	232,880	150,302	27,305	18.2
1990	243,513	155,258	29,824	19.2
1995	252,750	159,738	31,401	19.7
2000	260,378	167,502	31,822	19.0
2005	267,603	175,469	32,436	18.5
2010	275,335	180,555	34,837	19.3
2015	283,164	181,704	39,519	21.7
2020	290,115	181,124	45,102	24.9
2025	295,742	180,403	50,920	28.2
Percent of Population				
1975	....	62.4	10.5	....
1977	....	63.4	10.8	....
1980	....	64.6	11.2	....
1985	....	64.5	11.7	....
1990	....	63.8	12.2	....
1995	....	63.2	12.4	....
2000	....	64.3	12.2	....
2005	....	65.6	12.1	....
2010	....	65.6	12.7	....
2015	....	64.2	14.0	....
2020	....	62.4	15.6	....
2025	....	61.0	17.2	....
Change in Population				
1975-1980	8,600	10,104	2,507	....
1980-1985	10,721	6,894	2,378	....
1985-1990	10,633	4,956	2,519	....
1990-1995	9,237	4,480	1,577	....
1995-2000	7,628	7,764	421	....
2000-2005	7,225	7,967	614	....
2005-2010	7,732	5,086	2,401	....
2010-2015	7,829	1,149	4,682	....
2015-2020	6,951	-580	5,583	....
2020-2025	5,627	-721	5,818	....
Percent Change in Population				
1975-1980	4.0	7.6	11.2	....
1980-1985	4.8	4.8	9.5	....
1985-1990	4.6	3.3	9.2	....
1990-1995	3.8	2.9	5.3	....
1995-2000	3.0	4.9	1.3	....
2000-2005	2.8	4.8	1.9	....
2005-2010	2.9	2.9	7.4	....
2010-2015	2.8	0.6	13.4	....
2015-2020	2.5	-0.3	14.1	....
2020-2025	1.9	-0.4	12.9	....

TABLE 6: ESTIMATES AND PROJECTIONS OF THE POPULATION IN WORKING AND RETIREMENT AGES

Series III

(Numbers in thousands. As of July 1. Including Armed Forces Overseas.)

	Total population	Population in Selected Age Groups: 16-64 years old (working ages)	Population in Selected Age Groups: 65 years and over (retirement ages)	Number of persons 65 years and over per 100 persons 16-64 years old
Population				
1975	213,559	133,304	22,420	16.8
1977	216,817	137,515	23,494	17.1
1980	220,732	143,408	24,927	17.4
1985	228,879	150,302	27,305	18.2
1990	236,264	155,258	29,824	19.2
1995	241,973	158,816	31,401	19.8
2000	245,876	164,043	31,822	19.4
2005	248,631	168,928	32,436	19.2
2010	250,892	170,552	34,837	20.4
2015	252,548	168,113	39,519	23.5
2020	253,011	163,321	45,102	27.6
2025	251,915	157,417	50,920	32.3
Percent of Population				
1975	....	62.4	10.5	....
1977	....	63.4	10.8	....
1980	....	65.0	11.3	....
1985	....	65.7	11.9	....
1990	....	65.7	12.6	....
1995	....	65.6	13.0	....
2000	....	66.7	12.9	....
2005	....	67.9	13.0	....
2010	....	68.0	13.9	....
2015	....	66.6	15.6	....
2020	....	64.6	17.8	....
2025	....	62.5	20.2	....
Change in Population				
1975-1980	7,173	10,104	2,507	....
1980-1985	8,147	6,894	2,378	....
1985-1990	7,385	4,956	2,519	....
1990-1995	5,709	3,558	1,577	....
1995-2000	3,903	5,227	421	....
2000-2005	2,755	4,885	614	....
2005-2010	2,261	1,624	2,401	....
2010-2015	1,656	-2,439	4,682	....
2015-2020	463	-4,792	5,583	....
2020-2025	-1,096	-5,904	5,818	....
Percent Change in Population				
1975-1980	3.4	7.6	11.2	....
1980-1985	3.7	4.8	9.5	....
1985-1990	3.2	3.3	9.2	....
1990-1995	2.4	2.3	5.3	....
1995-2000	1.6	3.3	1.3	....
2000-2005	1.1	3.0	1.9	....
2005-2010	0.9	1.0	7.4	....
2010-2015	0.7	-1.4	13.4	....
2015-2020	0.2	-2.9	14.1	....
2020-2025	-0.4	-3.6	12.9	....

Additional Questions Asked of Dr. Paul C. Glick by the Chairman

Question 1. According to your testimony, marriage rates are down and divorce rates are up. Some experts are predicting the end of the American family as we know it.

What are your thoughts on this important topic?

What do you think the American family will look like in 1990?

Answer. In my opinion, the family in 1990—12 years from now—will look more like the family of 1978 than the family of 1978 looks like the family of 1966—12 years ago. This opinion is consistent with the theme of my prepared statement on "The Future of the American Family," namely, that most of demographic changes in family life seem likely to slow down during the next decade or two.

By 1990—long after I have retired and will be unavailable for further questioning—the vast majority of adults in the middle years (around 35 to 55 years old) should be married and the parents of a small number of children (about 2.5 children, on the average). Three of every four women and five of every six men of this age range should be married and living with a spouse—only a couple of percentage points below the present level. All but 6 or 7 percent of those who married will have become parents; a similar proportion will have never married, and only one-fifth of these persons will have become parents. Also by 1990 about four of every ten adults in their middle years will have ever experienced divorce. This is only a few percentage points above the lifetime level (38 percent) for women who are now 25 to 29 years of age. The proportion of unmarried adults who will be living together as members of unmarried couples may become twice as high as the present 4 percent, but this is one of the very few areas of recent rapid change that seems likely to continue to increase substantially before it levels off.

Question 2. You have stated that the labor force participation of women rose from 38 percent in 1960 to 48 percent in 1977 and that it should stop rising soon. However, the latest data for April 1978 show 49.7 percent of all women working.

How do you explain this continuation?

If women's labor force participation continues to rise, what would be the repercussions for the family?

Answer. The two percent increase between 1977 and 1978 in the proportion of women who are in the labor force is no guarantee that the rate will go on increasing that much until 1990. If such an unlikely event should occur, it would probably be a consequence of other economic and demographic developments that are beyond the current horizon.

If women's labor force participation continues to rise during the next dozen years as much as it has during the last dozen years, the projected slow changes in family characteristics noted above in reply to question 1 would be expected to become more rapid changes. But even if the increase in worker rates for women should not slacken before 1990, people should have become so accustomed to fast changes that they would become more able to take them in stride—especially members of the young adult generation with much different expectations than those of us in the older generations.

Question 3. In your testimony you contend that parents are spending more time with each child than in the past?

Do the data support this contention?

Doesn't increased work participation by women counter-balance the effect of fewer children?

Answer. In my testimony I was careful to say that "Other things being equal * * * one would expect that the father and mother of today can spend more time with each of their children and with each other * * *" We have no relevant time-use studies to document this "expectation" of what "can" be done. To the extent that a majority of children are in school most of the day—when the mother may or may not be working outside the home—the mornings and evenings are the main times available for spending with the children whether or not the mother works. Then it becomes in large part a matter of logic and arithmetic; a mother with four children of given ages should be able to spend only about half as much time with each of the children as she could if she had only two such children. Whether she would if she worked (or if she did not work) away from home is a question that research studies would be needed to obtain the answer.

Question 4. In the May 23rd testimony, Dr. Peter Morrison testified that the Population Profile series be expanded to compare to the Manpower Report to the President. Some reference was also made to "Status" as a model for a more detailed demographic survey of the nation. Do you have additional thoughts on this topic? How would you visualize such a publication?

Answer. I like to think of the annual Population Profile as the Census Bureau's specialized vehicle for issuing early in a given year the highlights of survey findings on population characteristics that were produced by the Bureau for the preceding year and one earlier base year. This annual report serves its purpose in no small part because of the promptness of its publication (usually in March or April). If it were expanded into a report similar in scope and size to the Manpower Report to the President, the resulting report would serve a more sophisticated audience, but a great deal more time would be required to draft it and to debate the policy issues implied by the recent changes. Likewise, the recurring report formerly issued by the Bureau under the title "Status" could serve still another very useful but quite different, purpose if it were to be issued once again. Meantime, the Bureau is engaged in Federally funded studies to be published under the designation of "Social Indicators." My impression is that the public would be best served by keeping the Population Profile reports essentially as they are and by making whatever "expansion" that seems advisable through the Social Indicators program where the reports could be prepared with the proper amount of time-consuming deliberation about the underlying implications of the tabular and graphic displays which are likely to have a longer time perspective.

ADDITIONAL QUESTIONS ASKED OF MR. VINCENT P. BARABBA BY THE CHAIRMAN

Question 1. What does the President's (President Carter) Reorganization Project for the Federal Statistical System hope to accomplish?

Answer. The primary objective of the President's Reorganization Project is to design a means for strengthening the decentralized system of Federal statistical agencies with additional capability for the coordination and management of relevant functions and the provision of selective overall policy direction. The Project does not propose to change the decentralized institutional nature of the statistical system, although analysis of the need for some consolidation and for realignment of function will be included. It is not possible to accomplish all aspects of coordination and policy planning of a large and decentralized system from any one place in the decision structure. Thus, the greater coordinating and management capacity must be designed into each major level of decision making, from the agency through the cabinet secretary's office to the Presidential level.

Question 2. In your opinion, will this Reorganization effort result in a more effective use of demographic data in long-range planning, and policy formation?

Answer. The Reorganization should result in better integration and coordination of Federal data collection analysis and decision making including demographic data and policy formation. The approach of the Project is one which views statistical coordination and planning within the context of the organization and design of the decision process itself and the institutional structure of information on which decision makers depend.

Question 3. Could you recommend any institutional changes which would enhance the capacity of the Federal government to plan for the long-range changes that are occurring in our population?

Answer. The Federal Statistical System Reorganization Project is just underway so it is premature to talk about any recommendations that might emerge.

ADDITIONAL QUESTIONS ASKED OF DR. THOMAS J. ESPENSHADE BY THE CHAIRMAN

Question 1. During your oral presentation before the Committee, Congressman Scheuer asked you to supply the Committee with a list of the States that have formed population commissions. Could you provide that information?

Answer. I enclose the following excerpt from the article "Formulating Population Policy: A Case Study of the United States" by Rebecca Cook. It is taken from "Population Policymaking in the American States: Issues and Processes," edited by Bergman, *et. al.*, Lexington Books, pp. 15–42.

Population Policymaking in the American States

Issues and Processes

Edited by

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Formulating Population Policy: A Case Study of the United States

Rebecca J. Cook*

Introduction

The objectives of this article are: (1) to describe how population policies are perceived, formulated and implemented in the United States and (2) to analyze how and why the definition of demographic trends by ten state commissions have a profound impact on how policies are developed and evaluated. Some of the demographic components of policy will be outlined for the law maker and some of the legal components of policy will be described for the demographer.

For the purposes of explanation, four analytical population policy models are developed: (1) the family planning model, (2) the motivation model, (3) the population distribution model and (4) the per capita consumption model. There is no one correct policy model but rather many policy models have and can be developed based on different social, economic, political and environmental conditions of a state. *The article's principal analytical utility lies in its challenge to state officials to develop their policy model based on the unique conditions and goals of their state.*

A legal systems model outlines the many facets of policymaking that should be taken into consideration in helping to determine which kinds of legal change should be used in implementing policy. Since the demographic effectiveness of legal change on a population policy is uncertain or unknown, subjecting alternative pieces of legislation–the "inputs"–to test hypothesizing a desired "output" might help to formulate and choose more effective policies. For example, compare the effectiveness of two pieces of legislation–one requiring the teaching of population education and the other instituting programs to raise the status of women. Determine which legal change would be more functional in implementing a policy of population reduction. The answer depends on many conditions within a state, some of which could be determined by projecting the probable feedback.

The effectiveness of any institution in implementing policy is determined in part by how well policies are defined and how well institutions are structured. It could be a relatively straight-forward matter to establish effective statutory

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policy. Most states have developed adequate statutory family planning policies and have created the agencies necessary to implement the family planning objectives. However, they are just beginning to articulate and develop three subsequent models–the motivation model, the distribution model and the per capita consumption model–to enable them to adequately develop institutions capable of implementing these models' objectives.

Once a policy is selected, the next institutional problem becomes the determination of the indicators needed to measure the policy's effectiveness. The search for criteria raise such issues as: (1) is the two child family an adequate policy indicator to measure the effectiveness of a stabilization policy? (2) do the given indicators ignore the other dimensions of the problem?; and (3) how are institutions best designed to evaluate policy?

This article asks more questions about policymaking than it answers. It is hoped, however, that the questions will be helpful in determining how, and at what points, the legal process can be used in formulating and implementing population policies.

Population Policy Formulation

Population policy is the direct and indirect result of legislative, judicial, executive and administrative actions directly and indirectly affecting many demographic components. These components include (1) the size of population; (2) the rate of increase or decrease of either birth, death, or growth rates; (3) the distribution of a populace within an area including both internal and international migration; (4) the age and racial composition of a population, and (5) the qualitative composition of a population in terms of *inter alia*, education, per capita consumption, and per capita income.

Population policies fall along a wide spectrum: on one end, the anti-natalists assert the advantages of lower growth rates; at the other end the pro-natalists assert the benefits of an increased population. Between these extremes are variations with anticipated and unanticipated consequences.[1]

There are four behavioral elements of population change: political, economic, social and environmental. The effects of population change can be diagramed by comparing these behavioral elements on a vertical axis and their determinants (size, rate, distribution, and composition) on a horizontal axis.[2]

State Population Commissions

In formulating population policy states are faced with the choice of whether to allow existing trends to shape the future size, rates of growth, composition, distribution and per capita consumption of its population or whether to alter these trends by adopting population policies. Either alternative, in effect, constitutes population policy.[3] Twelve states through special state commissions have issued reports recommending explicit policies either to stabilize growth rates or to locate the populace in better balance relative to resources and services. These policy recommendations agree with the following conclusion of the Report of the Commission on Population Growth and the American Future which states:

> The Commission believes that the gradual stabilization of population–bringing births into balance with deaths–would contribute significantly to the nation's ability to solve its problems, although such problems would not be solved by population stabilization alone. It would, however, enable our society to shift its focus increasingly from quantity to quality.[4]

These commissions have been either special population commissions,[5] subcommittees of State Environmental Commission,[6] or Commissions on Land Use and Population Distribution.[7] Although the commissions have been appointed by the Governors and/or the state legislatures, the reports have been primarily the result of research by citizens and state officials interested in population matters. The commission members represent a broad spectrum of racial, economic, religious and academic backgrounds. The reports are based in large part upon citizen testimony, academic studies performed at state universities, and statements of state and local officials. As a result these reports are useful in educating the general public about state population policies.

Demographic Trends

Recognizing that demographic trends form the basis of population policy, the California, Colorado, Hawaii, Massachusetts and Michigan reports investigate the recent history and the projected future of population growth and change.[8] Each report distinguishes between (1) growth due to natural increase; (2) growth due to migration; and (3) differential growth rates between the urban and rural areas. Policies are recommended based on these three important distinctions.

For example, Colorado's population grew by 26 percent from 1,753,947 to 2,207,259 in the sixties. However, 49 percent of this increase was due to net migration.[9] California expanded by 28 percent in the sixties, with a present population of about 20 million. 51 percent of that increase is attributable to net migration, but this factor has begun to diminish–relatively and absolutely–in relation to natural growth.[10] California and Colorado were used as examples not only because they were among the fastest growing states in population, but because their population problems should be solved by two distinct policies, one aimed at net migration and the other aimed at the birthrate.

4. *Report of the Commission on Population Growth and the American Future*, (Mar. 1972), available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

5. *California Population Problems and State Policy*, (California State Assembly Science and Technology Advisory Council, Dec. 1971). (Hereinafter cited as *California Report*); *Report of the Temporary Commission on Population Stabilization* (Hawaii State Legislatures, 1971), (hereinafter cited as *Hawaii Report*); *Final Report of the House Special Committee Investigating the Trend and Impact of Population Growth in the Commonwealth of Massachusetts*, (Massachusetts State Legislature, Dec. 1971) (hereinafter cited as *Massachusetts Report*). *Hearings of the Michigan State Senate Special Committee on Impacts and Trends of Population Growth in the State of Michigan*, (Michigan State Legislature, Oct. 15, 1970); *Report of the Pennsylvania Abortion Law Commission*, (Pennsylvania Exec. Dept. June 1972); *Population Distribution in Texas* (Texas State Legislators Senate Interim Committee on Population Distribution, Dec. 1972), (hereinafter cited as *Texas Report*).

6. *Colorado Options for the Future*, (Colorado Environmental Commission, 1972), (hereinafter cited as *Colorado Report*); *An Environmental Policy for Connecticut*, (Governor's Committee on Environmental Policy, June 1970); Oakley D. and L. Corsa, *Population Policy for the State of Michigan*, (prepared for the Michigan Governor's Council Population Committee, March 1973), hereinafter cited as *Michigan Report*).

7. *Co-ordinating Governments Through Regionalism and Reform*, Vol. 1, *Land Use Control: Modern Techniques for Modern Problems*, and Vol. 2, *Fiscal Crisis and Municipal Manpower Opportunities: Letting Necessity Mother Invention*, (New York State Legislature Committee on Metropolitan Regional Areas Legislative Document No. 18, 1969-71); *Final Report of the Wisconsin Land Resources Committee*, (Wisconsin State Legislature, Feb. 1973).

8. *California's Twenty Million*, supra, n. 3 at 6.

9. *Colorado Report*, supra, n. 6, at 7.

10. *California's Twenty Million*, supra, n. 3, at 262.

11. *Colorado Report*, supra, n. 6, at 7.

12. *California's Twenty Million*, supra, n. 3, at 272.

13. Hauser, P., "The Census of 1970," *Scientific American*, 225:1:17-25 (July 1971).

14. *Colorado Report*, supra, n. 6, at 7.

15. *California Report*, supra, n. 5, at 6.

16. *Michigan Report*, supra, n. 6, at 33.

17. Id. at 19.

18. *Colorado Report*, supra, n. 6, at 55.

19. Davis, Kingsley, "Population Policy: Will Current Programs Succeed?" *Science*, 158:3802 732, (Nov. 1967). Copyright 1967 by the American Association for the Advancement of Science.

20. *Colorado Report*, supra, n. 6, at 53.

IMPACT OF THE BABY BOOM AND BUST ON THE NEEDS OF YOUTH

THURSDAY, MAY 25, 1978

U.S. HOUSE OF REPRESENTATIVES,
SELECT COMMITTEE ON POPULATION,
Washington, D.C.

The task force met, pursuant to notice, in room 2212, Rayburn House Office Building, at 9:30 a.m., Hon. Daniel Akaka and Hon. Dave Stockman (cochairmen) presiding.

Members in attendance: Mr. Akaka, Mr. Stockman, Mr. Scheuer, Mr. Erlenborn, Jr., Mr. Beilenson, Mr. Kildee.

Also present: Dr. Williams, task force director; Dr. Martin, research associate; Dr. Bouvier, professional consultant; Ms. Parks, special assistant; Ms. Stolp, research assistant; Ms. Tames, research assistant; Mr. Lieberman, intern.

Mr. **AKAKA**. This hearing of the Select Committee on Population, Task Force IV, on the impact of the baby boom and bust on the needs of youth, will come to order.

I would like to welcome all of our witnesses this morning and acknowledge the chairman of our committee, Mr. Scheuer. I would also like to thank our staff for all of the preparation that has gone into the materials before us this morning.

I want to remind the witnesses that their prepared statements will be included in the record in total and that we would like to have each of you make a 5- to 10-minute summary of your statements. Following your presentations, we will have some questions to ask you.

We will ask Dr. Joe Wray to make his presentation first. Will you please begin, Dr. Wray?

STATEMENT OF DR. JOE D. WRAY, POPULATION STUDIES CENTER, HARVARD UNIVERSITY

[Prepared Statement in Appendix on p. 456.]

Dr. **WRAY**. Mr. Akaka, Mr. Scheuer, members of the staff, and guests, I was asked to come here today to talk with the committee about the impact of family size and birth interval on child health.

The written material that you have seen is a review of the evidence concerning this issue based on studies available a few years ago. What I will do here is provide a sort of update discussing knowledge gained since the original review.

I am sure you know that in the early years of awareness of the population problem, we saw it as a national or a global problem. We worried about doubling rates and so forth, and the impact on whole countries, or the globe. We began only rather recently to look at the micro level and to examine the impact of population pressure on families and individuals.

Now things like family size and birth intervals have been included in health and family studies for many years, but they had not been considered in the light of the population problem. By looking at the impact of family size or birth interval on the well-being of children, however, we began to bring the population problem down to an understandable, comprehensible level, and obviously down to the level at which families make their decisions about having children.

Studies carried out in the 1920's and 1930's and all the way into the 1970's show clear and strong associations between family size and a number of health variables affecting children. In very simple terms, the bigger the family, the more illness, the higher the death rates, the poorer the growth of the children. One of the more interesting associations is the fact that the bigger the family, the lower the IQ's in the children.

Mr. **Scheuer**. Is this the IQ of all of the children or IQ of the youngest child?

Dr. **Wray**. We will get into this when we see the evidence.

Mr. **Scheuer**. Is the IQ of the first child affected by the fact that you have a large number of siblings? I was a second child and I had three siblings after me. Would I have been a Senator by now if I had not had those three siblings? [Laughter.]

Dr. **Wray**. The data show that the odds are in your favor as the second child. You are better off as the second child than you would have been as the fifth child.

Mr. **Scheuer**. Would I have been better off as the second child in a family of two than I was a second child in a family of five?

Dr. **Wray**. Yes, but only slightly, as you will see from the data.

Mr. **Scheuer**. Would that have made the difference?

Dr. **Wray**. Some difference. Let me refer you to figure 3.

Mr. **Scheuer**. My colleague pointed out that if I could have been a second child in a family of two, rather than the second child in a family of five, it would have meant an improvement in my IQ that might have enabled me to make the Senate. I would not have had to cope with the reapportionment problem that cost me my seat in 1972 and cost me 10 years of seniority when I came back. [Laughter.]

Dr. **Wray**. That might be true. We know, at least, on the average, second children have higher IQ's than fifth children—but we don't understand fully why it's so. Let me refer you again to figure 3 where you can see the association between both family size and birth order in the upper part of the figure, and between family size and social class in the lower part. It is quite clear that intelligence test performance is lower in children from larger families, regardless of birth order or social class. This association, again, has been known for a long time. Back in the 1930's, the results of all of the "11-plus" examinations of kids in Scotland were analyzed by family size. The same association seen in figure 3 was apparent then. It alarmed the elite in England. They were aware that lower class families had a larger number of kids, so people wrote passionate essays lamenting the "dilution" of the national intelligence—Jacques Cattel, for example, wrote one such essay.

Now, the same data, that is, the results from the total population of children who took the 11-plus exams in Scotland, were reexamined in the late 1940's and curiously enough the association was exactly the same. That is, as family size increased, IQ went down. But test scores were higher in every family size category in the late 1940's than they had been in the late 1930's. So this sort of defused the concern: The "national intelligence" was not going down, but seemed, in fact, to be going up.

Mr. **Scheuer**. So the line still stayed at that same slope, but it just moved up?

Dr. **Wray**. Yes; exactly.

Mr. **Scheuer**. Can you tell us what it means? Is it a factor of income and ability of families to provide proper nutrition and health care or is it their ability to provide excellent education or provide books and magazines in the house? Would this be true—and I am not trying to be humorous—of a family like the Kennedys or Governor Carey of New York where they have large families, but where they are obviously at the top of the socioeconomic educational or vocational pyramid? Would it be as true of a Kennedy or Carey family or a family like mine where there were five siblings as it would be for low-income and perhaps economically deprived people?

Dr. **Wray**. Let me refer you once more to figure 3. Look at the lower right-hand corner. There you see the association between IQ and family size by social class. You see the slope is the same; in every social class, high or low, the same negative association is apparent.

Now, again, the thing to stress in all of this is that this is a statistical phenomenon. Not every child or every person from a 10-child family or 12-child family has a low IQ, but "on the average", that is the case, even in families which are better off.

Someone, in describing the statistical phenomenon we are dealing with, put it this way: We can predict with great accuracy that on a given day in this country, a certain number of people are going to be killed in car accidents and we can predict that with confidence. We have the statistical tools to do that. What we cannot do is predict which individuals will be killed on a given day. We have the population data; we do not have the individual data. The same is true for the relation between IQ and family size.

The implications of family size in this country have been speculated about in an interesting fashion by Zajonc. Some of his results are shown in figure 2. Zajonc is one of many people who have tried to understand what it is about family size or birth order that affects what we test and measure and call IQ. He has a theory that the IQ of a child is determined by the "environmental" IQ. Suppose you have two parents with an IQ of 100. The average is 100. When a child is born into that family, his environment has an average IQ of 100. When the second child comes along, the first one is not up to 100 yet, so the family average is lower. When the third one comes along, the average is still lower. This lower "environmental" IQ makes the IQ of each succeeding child lower. I do not believe this, but it is an intriguing theory.

Zajonc has analyzed the SAT scores in a very interesting fashion in order to explore such relations. I am sure you know that SAT scores have been declining in this country in recent years and that this decline has been the cause of great concern. There are those who attribute it to failure of the school system. Zajonc proposes an alternative explanation. He shows that if you plot the average birth order of the kids by year of birth and relate that to SAT averages in the year in which they will be taking the test, you find quite a remarkable parallel, as seen clearly in figure 2.

Now, I am not at all sure about his theory, but I do indeed believe the association. The proof of the pudding will come in another 5 or 10 years when we can look for an increase in average SAT scores, if Zajonc is right, as the birth order of those taking the test decreases—that is, as the family size from which the children come, decreases.

Mr. **SCHEUER**. Professor, I hope that before you finish your oral presentation, you will give us some policy and program recommendations that result from all of the fascinating material that you are giving us. I hope all the other witnesses will do the same. Basically we are here not as scholars. We are here because we make policy and design programs. So I hope that, in addition to giving us these extremely fascinating perceptions and analyses, you will also give us some bottomline recommendations on both policies and programs.

Dr. **WRAY**. All right, sure.

QUESTIONS AND REMARKS

Mr. **SCHEUER**. Can we infer from your testimony that reductions in our resources devoted to children would be possible due to smaller family size? Conversely, is it more a question of increasing the per capita funneling of resources, time, caring, and emotional and intellectual investment per child?

Dr. **WRAY**. Let me speak to that issue as a pediatrician with experience in other cultures. Most of my career has been spent overseas in developing countries teaching pediatrics and community medicine. My concerns about these issues grew out of field research that I did which showed a strong association between family size and malnutrition in kids. That got me interested in the general phenomenon.

The point here, though, is that out of my experience in traditional societies with large multigenerational families living in semisubsistence agricultural settings, and then with families in this country, I have begun to have a different view of family size. In the traditional society, a girl growing up acquires all that that culture has to offer about child rearing. Now we may be able to identify specific deficiencies in her knowledge, but she gets whatever her culture has to offer by taking care of her younger sibs or of children of her older sibs and when she gives birth to a child, she has the support of her mother, her mother-in-law, so the social support structures are powerful. She has a lot of help available 24 hours a day. What I see and what I worry about today is the absence of these things in our culture. Girls growing up in small, isolated, nuclear families do not have a chance to learn much about child rearing from their mothers; when they become mothers they have very little social support. This has been going on for several generations. It is aggravated by small family size, by the fact that we live in nuclear families rather than extended families, and by the amount of geographic mobility. Today, a vast majority of young people become parents several thousand miles away from their own families.

The policy issue that bothers me about current trends in family size and the way we live as families, is the notion that young women growing up in our society are not prepared for motherhood. I believe that many problems—including child abuse—are related to this. The obvious implication is that we should provide better preparation for parenthood.

However, I do not have that much confidence in our ability to devise curriculae—courses—to do some of the things that more traditional societies or cultures handle without anybody giving it any thought. In traditional societies there is certainly no curriculum to prepare people for parenthood. Nobody in traditional societies thinks of it as something that you do, but it happens. It happens very effectively.

In contrast, we are in a phase in our social evolution when preparation for parenthood is poor and social support is limited. I think many of the things that are going on with kids today are manifestations of this and I am not sure we know how to cope. Thus, I think this is the policy concern that worries me more than anything else.

Now, to bring this around, finally, to the specific form of your question, the data that are available from the older studies show clearly that kids from small families are better off. There is less morbidity; survival rates are higher; IQ's are higher, and so on.

I personally am not sure that those advantages are sufficient to compensate for some of the other social behavioral disadvantages that I am talking about. I think that the things that we are seeing today in our society—child abuse is sort of the tip of the iceberg—relate to these changes in family size, family structure, and I see these as being very serious in their implications for the future.

Mr. AKAKA. Would you say, Dr. Wray, that a large family is detrimental to the children in it because possibly they are unwanted? Does that contribute to the lowering of the IQ?

Dr. WRAY. Like many questions relating to this phenomenon, your question is difficult to answer because it is so hard to generalize. My answer would be yes indeed that is true in some families. On the other hand, we all know large families where all of the kids were wanted and got along perfectly well. Looking at it as a population phenomenon, I think the answer to your question is yes.

Mr. SCHEUER. During this committee's hearings on fertility and contraception in the United States, the witnesses agreed that this country should have sex education in the schools. We have had a number of Catholic representatives appear before us and say that sex education is a good idea and, in fact, is taught in many Catholic schools. However, they stressed that sex education should not be confined to simply the biology of sex. Rather, you should teach these young people a sense of their own dignity, self-esteem, and self-worth, and teach what society expects of them. We agree with that view. Now, are you going a step further and suggest that in addition to teaching "plumbing" sex education and family life education, we ought to include something in the curriculum about mothering and fathering and what it takes to make a happy home? This would include teaching these young boys and girls what kind of contribution they can make toward the welfare and integrity of their families as well as the welfare of their future children?

Dr. **Wray**. I am saying exactly that. But I am expressing some doubts, some reservations, about our ability to handle that kind of task, in a formal educational setting. As I look at this from the perspective that I have acquired while working in traditional cultures, as I mentioned earlier, I think that traditional cultures have devices built into the socialization process, which I do not believe we understand very well, but which take care of these things. When you try to take it out of that context and do it artificially, so to speak, in a school or classroom setting, I have real reservations.

I am reminded that we hear assertions that what is needed along with "sex plumbing" education is "sex role" education; that we must teach boys how to be men and girls to be women. I keep thinking, however, of my experiences in villages in Thailand where nobody ever heard of sex role education, but where men were doing what men had done for hundreds of years and women were doing what women had done and the little kids grow up in that culture with no confusion, no ambivalence whatsoever about their sex roles.

Now, in our society today, our roles are not that sharply defined. Little boys get up and see their fathers go off, but do not know what men do because they may never see them at work. Girls are better off; they can see their mothers filling at least one important role of women.

Mr. **Scheuer**. These roles are changing.

Dr. **Wray**. They are changing, but I think my point here is that I am worried about our ability to devise curriculums to do things that traditional societies do well without anyone giving it any thought. I am concerned about——

Mr. **Scheuer**. I suppose you might say that education in the school is essentially an artificial process and that people learn from their environments. School is sort of a structured, artificial environment, but it seems to work.

Congressman Akaka is going to answer the rollcall and I will try not to say anything intelligent until he comes back. [Laughter.]

Supposing we had invited you here for our Task Force on International Population and Development Assistance and I had said one of the problems in the developing world is that young boys grow up with a very clear sense of the kind of sex roles they are expected to play in adulthood. It is made perfectly clear to girls from infancy that their job is to till the land and to bear children. These clearly defined sex roles is one of the reasons for high fertility rates in the developing world. I might then ask you how do we send them a different kind of signal? How can we help these societies to send a different kind of signal to these young girls from a very young age as to who they are and the kind of roles they are expected to play?

In effect, what I am stating is that the signals society sends to young girls concerning their adult roles, can be disruptive as well as positive.

It is true that a woman grows up to be at home with those roles and she does not suffer a lot of conflict until the time comes when social attitudes begin to change. Those roles can be disruptive to her growth and development as a human being and, as we have seen, it can result in high fertility rates. This kind of sex role identification can be disruptive to a society's efforts to produce development programs for health, education, housing, employment, and industrial development that would improve the quality of their lives.

Dr. **Wray**. Let me respond to that, and make, I think, three points. First of all, I think the basic question is a fair one and there is no doubt that the inculcation of the traditional sex roles may be inhibitory to the full development of some people as individuals. If you think of society as a whole, however, and as you look at the evolution; at the history; we see that—of developing countries in the last 10 or 15 years—are where the family situation evolves to the point that there no great advantages in having too many kids and where, in fact, the family is stressed by having a lot of kids, then traditional attitudes do change and rather quickly. As families change from a traditional extended pattern in a subsistence economy into a more modern nuclear pattern in a more urban cash economy, where they have to buy all the food they eat, then they begin to feel the pressures of family size.

Now, once again, generalizations are risky. But certainly in Latin America, for example, this began to happen—attitudes began to change remarkably—before health professionals realized it. And I say that because by the time health professionals began to look at the phenomenon of abortion in Latin American, it was widespread. I mean 1 in every 3 or 4 pregnancies was terminated by an abortion. Now, the health professions were——

Mr. **Scheuer**. We heard testimony during our hearings on International Population and Development Assistance from Colombia and Costa Rica who said that in many countries it was 1 to 1, an abortion for every live birth.

Dr. **Wray**. That is higher than I recall, but surely possible. The point, though, is that these high rates had evolved before the health professionals took notice. The only way that I can interpret such rates is as a reflection of the desperate desire of people not to have so many kids. Thus, before we health professionals recognized the "population problem", before there were "population policies", and before family planning programs were available, ordinary people in Latin America had recognized their own problems and were using abortions to limit family size.

I was in Colombia when this phenomenon began to be recognized in the early 1960's. When we did recognize it and began to talk to mothers, those women knew what they were doing. They knew that when they had an induced abortion they were putting their life on the line in order to have another child. All of this is a way of saying that people are perfectly capable of recognizing population pressure at their own family level when they begin to feel it. Their perception of a problem is going to be different from ours. They are looking at it from their own family level as opposed to the national level and what they see may be different.

In my own experience in developing countries, I have learned to trust the basic intelligence of ordinary people around issues like this. When see that their own welfare and the welfare of their kids is impaired by having too many kids, they will find ways to stop—in Latin America, the only really effective way available was abortion.

Now, my other response to your question is this. I think that in those cultures around the world where women have been given opportunities, where they have been brought into the mainstream of education and where career possibilities have opened up, the same thing is happening that has happened in this country. That is, marriages are later, women spend more time on education, more women are employed outside their homes, and all the other modern phenomena occur; when this happens, fertility falls among women. As life evolves and society changes and as women are provided more opportunities, they take advantage of them and these attitudes, the old values about family size, et cetera, change very quickly. The Peoples Republic of China is a very clear example of this in that within the space of 25 years, there has been a incredible change in all these things. You can see the move from a society where powerful social forces were operating to get a woman to produce a lot of sons, to a society with a family size norm of two; all of this occuring in a short time in a poor country. So we know these——

Mr. SCHEUER. There is also a tremendous concentration of peer group pressure and pressures from the top down.

Dr. WRAY. Tremendous pressures, to be sure, but these other things are going on. I mean the education of women, job opportunities for women, delayed marriage, old age security, et cetera. My own biased view is that educational methods are not that effective. Nor is social pressure alone that effective. I simply doubt that reproductive behavior will change, unless the other social changes are going on to support women as they change their values and their behavior.

Mr. SCHEUER. I do not want to go on to the formal presentation of the next witness until Mr. Akaka returns from the rollcall vote. Let me ask one further question of Dr. Wray concerning the correlation between health, intelligence, and family size. Does this correlation lead you to any suggestions for national policymaking or national programs, for example, educational programs? You have obviously been thinking about this very deeply. What do you have in the way of a bottom-line suggestion for us.

Dr. WRAY. Well, looking at it purely from the physical health side, growth, morbidity, mortality, what have you, we are moving in the right direction in the sense that we are surely having smaller families—fertility rates are falling off. So I think all we need to do is sort of let things go as they are. The things that I find worrisome are those that I have already referred to in terms of what small family size may over the generations, to our ability to take good care of the kids.

Mr. SCHEUER. You do not seem very enthusiastic about the prospect of some kind of family life education that would direct itself to meeting the issues that you have raised.

Dr. **Wray**. I think we have to try, but I am not terribly confident. I think that some of the experiments going on—again the educators can speak to this more intelligently than I can—I think that some of the experiments going on where kids in school are given opportunities to take care of children, to lay their hands on a live baby and to learn how to handle kids, are definitely a step in the right direction. This is what the traditional societies do. Now we are hung up on licensing and on credentials and so there are real limits to how much you can let you children do. Measures to give kids real life experiences, I believe, are a step in the right direction. And there are such experiments going on.

Mr. **Scheuer**. What kind of experiments?

Dr. **Wray**. I am sorry, I'm not familiar with the details. I have heard bits and pieces about school systems where children at the elementary level are sent to day care centers, nursery centers, to work or play with the children there. You know, it is possible for a woman in this country to go through school, go through university, and arrive at motherhood without ever having laid a hand on a live baby in a responsible way.

Now, just the mechanics of child care obviously are not all that matter. I think exposure to babies, learning how to handle them, learning the whole array of skills are probably better acquired from experience than in a text book.

Mr. **Scheuer**. A teenager of 14 or 15 might also benefit from working in a day care center.

Dr. **Wray**. Ideally, you like to see exposures, I think, all through a person's life. And I think in fairness, the way we are going today, we ought to be providing the same experience for the boys. Girls and boys ought to be exposed to younger kids and learn how to handle them.

Mr. **Scheuer**. Yes, Professor.

Mrs. **Eisenberger**. Mr. Chairman.

Mr. **Scheuer**. Mrs. Eisenberger.

Mrs. **Eisenberger**. If I may, I would like to comment, please, on the aspect of parenting as it might be evidenced in our elementary and secondary schools. There are many school districts in the country that do offer experiences for young people in the parenting role. It is not unusual for a high school student to interact with an elementary school student or with a youngster in a prenursery day care program within the school facility. You raise an interesting point: Because of decreased family size, the one or two children in a family do not have the opportunity to interact with a series of younger siblings. A 16-, 17-, or 18-year-old in a family of 8 children or 6 children of the past would have had the opportunity to play with, diaper, care for, and become involved with a 3-year-old brother or sister. The implications of this for curriculum are broad and you raise that point—the broad implication, However, I wonder in terms of interplay and interaction, if it is the actual mechanical and physical handling, diapering and caring for a baby that we need to stress in schools. I wonder if the need is not much more in terms of the parenting role and what the implication of being a parent is and how you react, as a young person, in making your choices as to whether or not you want to have children. Young people defer marriage or defer child raising until they feel comfortable in the parenting role. I think the curriculum in our school districts is moving very rapidly in this direction of providing opportunities for young people, particularly at the secondary level, to have a broader range of experience prior to that decision. I think this trend is evidenced by our current deferred marriage rates and deferred child rearing. Young people are making choices.

Mr. **Scheuer**. Don't you think that somewhere in this education that there ought to be an opportunity for children in both elementary and secondary schools to work with young children under supervision and learn how to relate to them?

In this way they can learn the kind of inputs parents can have into the emotional and intellectual lives of their children. Do you not think that this is something that could be designed in an education program?

Mrs. **Eisenberger**. If I may respond to that?

Mr. **Scheuer**. Please.

Mrs. **Eisenberger**. You bring up a very interesting point and that is the concept of age segregation. We as a society practice age segregation to a degree and extent that has not been practiced by any society in the history of the world. We segregate preschoolers from prenursery from kindergarteners, from elementary schoolers and secondary schoolers and young adults. We even segregate our elderly in terms of the "young-old" and that is under 75, and the "old-old" that is over 75.

Mr. **Scheuer**. How do we segregate them?

Mrs. **Eisenberger**. In our policy programs. I believe that the Federal Government provides different policy and program guidelines and funding procedures for "young-old" and "old-old".

Mr. **Scheuer**. Does a 65- or 67-year-old person regard themselves as intrinsically different from an 80-year-old person?

Mrs. **Eisenberger**. Having not had the opportunity to experience the wisdom of age which I need to answer that question, sir, I am sorry I cannot.

Mr. **Scheuer**. Since Mr. Akaka has not returned yet, I am going to take the liberty of moving ahead. We thank you for your very excellent testimony Dr. Wray, and we thank you for having been patient enough to stay long after the normal time. Your testimony was of very great interest to us. We know you have another engagement and we are delighted and grateful that you were able to come.

Dr. **Wray**. Thank you very much.

Mr. **Scheuer**. Dr. Hofferth.

STATEMENT OF DR. SANDRA HOFFERTH, ANALYST, THE URBAN INSTITUTE

[Prepared Statement in Appendix on p. 525.]

Mr. **Scheuer**. Why don't you chat with us for 5 or 10 minutes and then I am sure we will have a few questions. We hope there will be some reactions among the panelists to things that have been said. So please proceed. We are delighted to have you.

Dr. **Hofferth**. I would like to speak to you briefly on the subject of family structure changes and child care. How is the family changing and how might children be affected? One of the most important changes, and the one I will focus on today, is the increased number of women employed outside the home. Women with young children have generally tended to remain at home. The largest percentage growth over the past decade has been in the labor force participation of the mothers of young children. The result is that the number of young children with working mothers is growing at a faster rate than the total number of young children. In 1977, there were 16.7 million pre-school children in the United States; 6.2 million with working mothers. By 1990, there will be an estimated 24.1 million pre-school children; 10.4 million with working mothers.

Mr. SCHEUER. I hope that before you are finished you will give us the policy and program implications of of these statistics.

Dr. HOFFERTH. What this means is that children are not just brought up by parents today in the United States, nor are they brought up just by relatives. The children of working mothers need care during the time the mother is away from home. The arrangements made, we call day care. How are they cared for now and how will they be cared for in the future? At present, only a small proportion of children are cared for in what we call day care centers, and that is under 10 percent. Most are cared for informally in their own homes generally by nonrelatives. Family structure appears to be the most important determinant of the type of care. whether this represents parental choice or a lack of alternatives is unknown. Of all the types of care, we know most about center care. What we know so far is that center care does not appear to harm children. Under some conditions, it may be good for them. This is directly relevant to what Dr. Wray has said: Not all children are brought up full-time by their parents, but a good many of them—today about 37 percent of pre-school children—are cared for at least part of the day in some other sort of arrangement.

We do not know much about informal day care arrangements or about those people who provide them.

Mr. SCHEUER. What do you mean by informal day care?

Dr. HOFFERTH. An arrangement such as a babysitter in the home who cares for the children while their mother is away, or a housekeeper who does housework and also cares for the young children. It includes the mother who takes her children to the home of another mother to care for the children during the time she is away. It includes care by a relative or by a nonrelative.

Mr. SCHEUER. Once you have a mother who takes her child to the home of a nonrelative and pays her for caring for the child, you get into a whole congeries of restrictions, barriers and standards. What do we do about it? We have had some efforts under the poverty program to compensate women who would take care of five or six children at a time for working mothers on her block. However, once you get to the point of taking a child from square one to square two, where square two is the home of a nonrelative and where money passes, you get into restrictions concerning building codes, sanitation, and other such barriers. Now, do you have any recommendations for us? Should there be a kind of half-way house between a mother taking care of her own child, either in her own home or a relative's home and a certified, qualified, registered day care center or nursery?

Dr. **Hofferth**. Yes, I would like to address that, but I would like to put it off for a little while, if I could.

Mr. **Scheuer**. All of us sitting here today find your testimony extremely interesting. We would appreciate it however, if you would give us your judgment, your wisdom, and tell us what ought to be done. We need your help and we need specific policy and program recommendations from you.

Dr. **Hofferth**. One fact that we should take into consideration is that fewer than 10 percent, and I estimate around 5 percent, of these arrangements are licensed. That means that these regulations to which you refer do not apply. The majority of arrangements are informal, very informal. They are arrangements between one mother and another. One person and another.

Mr. **Scheuer**. Let me interrupt you for just 1 minute. This is Congressman Dave Stockman who is cochairman of this task force and he will take over in Congressman Akaka's absence. Please proceed, Dr. Hofferth.

Dr. **Hofferth**. Sir, I have been talking about informal day care arrangements and about those who provide them. I have been emphasizing all along that more and more women are entering the labor force. However, as women enter the labor force, there may be a decreased supply of informal care because informal caretakers may be attracted into the labor force themselves. If so, informal care may become harder and harder to find.

Mr. **Scheuer**. Is the decreased availability of informal care good or bad?

Dr. **Hofferth**. Parents seem to prefer informal care. However, we do not really know whether it is preference or whether it is because day care centers are not available. I just wanted to point out that other changes are occurring such as increases in single-parent families, small families, and highy mobile families. This is likely to increase the need for care as well; whether it is because they are poor and care is subsidized or whether they prefer such care, such families are more likely to use centers.

So, in answer to your question concerning what can be done, there are a number of policies at the Federal level that affect the supply and demand for care. These policies are often not recognized. I would like to point out some of the ways in which current Federal policies do affect the demand and supply of care. I think that is the first place to start. After that, we can ask what we should do, because decisions have been made that have so far not been based on such evaluations.

First of all, the direct expenditures on day care, formal day care, amounted to about $2.5 billion in 1977. Yet the demand for and supply of day care are tied to policies other than direct expenditure on care. What sorts of policies are they? First, social policies affect the employment of the mother. Welfare policies, for example, affect the need to work, incentives to work, and in two-parent families, who works. So to begin with, there are current policies that affect whether children will need care, because they affect whether mothers work or not. So when we consider welfare policies, we can say that if we establish one sort of a policy and allow mothers of children under age 6 to stay home, then their children will not need formal care.

Mr. **Scheuer**. That may be a non sequitur. That mother may not be able to provide her children with everything they need in the way of an enriched home. Those children might possibly be better off in an enriched day care center or a Head Start type of program.

Dr. **Hofferth**. That is a possibility. Preschool programs of this type could be used in conjunction with public assistance, welfare programs. The mother may need to get out of the home for a few hours, may want to put her child in day care. This may help her be a better mother. Meanwhile, she can take courses or whatever. I agree with that completely. But these policies should be linked. The way day care is set up now, it is totally separate. It has no relationship or connection with employment policy. Employment policies affect women's wages. They affect the attractions of work, such as benefits and schedules. For example, if we had more flexible scheduling of work hours, extended maternal leave and reemployment rights for mother, there might be less need for care. So it is not simply a matter of saying that more and more mothers are entering the labor force, that have young children, and that we need to immediately go out and spend a lot of money on day care centers. This is not necessarily the way to approach the problem. It is one way but it should be combined with attention to, for example, flexible scheduling of hours. This would allow two parents with young children to split the care of their children. That is, one person could stay home to take care of the child for half a week and then could go to work the other half while the other person would stay home and take care of the child. So in employment policy, I would suggest flexible hours and scheduling for men and women and, included with that, seniority rights so that neither the men nor the women that wants to stay home would have to give up either the benefits or the seniority that might accrue.

Mr. **Stockman**. Could I interrupt right there?

Dr. **Hofferth**. Yes.

Mr. **Stockman**. What do you think are the main deterrents to scheduling flexible hours now—wage and hours laws, attitudes of employers—what would you point as the main obstacle?

Dr. **Hofferth**. Well, probably everything that you mentioned. First of all, men, fathers, are unwilling to work part time or to work on a flexible schedule. This may be because they fear for their careers; that is, that employers will not look at them as being as serious about their work. Then, because fathers are unwilling to take this time, if mothers take off, women are considered to be not as serious about their jobs. So it is probably a combination of the attitudes of employers and the attitudes of the parents themselves. It is true that this is something that would be very difficult to change. However, a commitment on the part of employers at the Federal level would help. The Federal Government can affect the way people view work if they take into consideration that both men and women have family responsibilities rather than just being one dimensional persons. We have mothers and we have fathers. Their children are very important.

Mr. **Stockman**. Yes, but what would the policy options be? I mean, that is attitudinal matter; a question of philosophy on perspective. What could we do policywise to facilitate this?

Dr. **Hofferth**. There are several bills. One covers the flexible scheduling of jobs in the Federal Government and the other one covers flexible hours.

Mr. **Stockman**. How would you recommend amending the wages and hours laws. I can see the obvious thing. If someone wanted to work 36 hours a week, which is practically a full week, 12 hours a day for 3 days, you could not do it now because you would have to pay overtime for 4 hours per day.

Dr. **Hofferth**. That is right.

Mr. **Scheuer**. You might be able to have this type of flexible workday if it was a hospital or some kind of institution that was open around the clock.

Mr. **Stockman**. Well, there are some exemptions, but they are being narrowed every year. In fact, the policy directions are narrower and seem to be eliminating the exemptions and maybe that is gong in just the wrong way.

Dr. **Hofferth**. I believe these bills do attempt to amend this, to allow employers to set up schedules and not pay overtime. I am not sure of the technicalities.

There is also a proposal pending to remove the ceiling on the number of civil positions, which is a barrier to increasing part-time positions.

Another proposal was introduced by Mr. Riegel of the Senate Human Resources Committee. This bill would guarantee reemployment rights for workers who temporarily relinquish employment to pursue education or child care and for other purposes.

> Any person who applies for reemployment under the provisions of this chapter within a period of 5 years shall retain all seniority and all rights and privileges attached there.

It does not provide for financial assistance during the period which the person is at home taking care of the children or is going to school. That is another sort of benefit or issue that could be considered.

Mr. **Scheuer**. Now, supposing a woman had three children over a 5-year period. Would that mean that she could really stay out of work 10 years because if she came back for a few days and then took another leave for the next child, 5 years would start running again?

Dr. **Hofferth**. No, in order to obtain rights, an employee must be continuously employed for a period of at least 5 years by an employer engaged in interstate commerce.

Mr. **Stockman**. That is qualified.

Mr. **Scheuer**. But how long would they stay out in that case?

Dr. **Hofferth**. Only for 5 years. After that, the person would either give up that job—right to come back, or——

Mr. **Scheuer**. What if they came back and then had another child after 6 months or a year?

Mr. **Stockman**. I think the qualifier there is 5 years.

Mr. **Scheuer**. Let me tell you why I raised that question. I just came back from an OECD meeting in Paris. The stewardesses told me on the flight coming back that under the policy of their airline, a hostess could get married, leave her work, raise her children, and after 15 years or so, come back with full seniority. They wanted to know if this was fair. Now, what would your answer be to those hostesses? These young, single women who are really looking at their work as a career?

Dr. HOFFERTH. I do not know the details of it, but 5 years would certainly seem to be reasonable. Do not forget, these young women may at some point want to have a child, in which case they would take advantage of the leave policy. If it were no longer available they might regret it at such a time. Most of us do want and will have children. Only a very small proportion of women do not have children. So some day it will be to their advantage.

Mr. SCHEUER. If I had been a little more on my toes, that is the answer that I would have given them.

[Laughter.]

Dr. HOFFERTH. Let me just point out a few more specific policies. I have mentioned welfare and employment. Tax policies also affect the type of care parents use and the profitability of care to providers. For example, the way the tax credit is set up provides credit for only certain types of care. Therefore, whatever types of care for which the credit is available will increase in use. However, on the other hand, the benefit of the income tax credit is in many cases offset by the cost of the Social Security tax to the employer. Thus, there may be no overall remaining benefit. This applies especially to the housekeeper, a person that comes into the home. The employer pays Social Security tax and gets a credit. However, the Social Security tax and child care deduction are just about equal and there remains no overall benefit.

Another type of policy, an educational policy, affects the need for care of 3- to 5-year-olds, but not the under 3-year-olds. I will give you some figures—26 percent of the 3-year-old children; 48 percent of the 4-year-old children; and 82 percent of the 5-year-old children with working mothers were enrolled in a nursery school or kindergarten in 1976. Expansion of preschool programs at low or no cost might substantially affect the types of care people rely on for their 3- to 5-year-olds. More and more of the 3- to 5-year-olds are entering nursery and kindergarten programs.

Mr. SCHEUER. Why do you say that age could not be extended down? Did we not have a fairly good experience in Headstart or did we not go below the 3 years? I know in Israel, they go right down to the first year, I think, after 6 months or so. Why do you say that we should not go below 3 years?

Dr. HOFFERTH. I am not saying necessarily that we should not. We have experience with the 3- to 5-year-old children now. We can definitely say that there are certain benefits from this program. Mothers do, in fact, put their children in preschool programs, mostly for part-day, although some working mothers put their children in for a full-day. Many mothers are hesitant to put their young children, toddlers, and infants, in this sort of program.

Mr. SCHEUER. Why are they hesitant?

Dr. HOFFERTH. The data that we have indicates that mothers feel the home environment is best for the young child. There is also some evidence from preschool studies that too many children together in one room is bad for them. There is too much stimulation for the infants and they wind up not being alert and attentive. The caretakers cannot care for them adequately. There is definitely a problem involving the number of caretakers, the number of infants and the quality of care.

Mr. **Scheuer**. Well, are you not pointing us toward some kind of synthesis of what we have heard this morning? We have heard that school buildings are being closed down because of the declining number of children of school age and that is expected to continue in the future. We also discussed the need for elderly people to have useful roles in society, the "young" elderly and the "elderly" elderly. We have heard a discussion concerning the need for elementary and secondary school students to be working with infants and toddlers under some kind of supervision. Could you not imagine a demonstration project where there would be a licensed teacher in a room where there might be an elderly person, an elementary schoolchild of 8 or 9 or 10 years old and possibly a secondary schoolchild and maybe a university student who is working toward a teacher's certificate, all working in a controlled environment. It would break these children away from the mass that you are talking about where there is overstimulation and overinteraction into the small groups of two or three or four? Could you not visualize some kind of demonstration project along these lines?

Dr. **Hofferth**. Yes, I think that would be a good idea. There is one problem with involving the elderly in such programs that I would like to point out: Social security regulations. There is an earnings limit which might be a barrier to an older person wanting to do such work if it were, in fact, paid. Welfare mothers might also be participants in this sort of project. However, again there is an earnings limit. It might not be to their advantage to participate for pay. As far as including schoolchildren, they would require supervision, so I am not sure to what extent that would take the burden off the caretakers. A teenager, yes, and there are a few——

Mr. **Scheuer**. I am not saying take the burden off the caretakers. If you are saying "caretakers" as a teacher?

Dr. **Hofferth**. Teacher, yes.

Mr. **Scheuer**. It might make the job of a teacher in that classroom much more challenging and much more complex. I do not think the teachers are looking for ways to avoid creative challenges. I think teachers would enjoy taking on this rather stimulating and creative role that they are not now playing. If, in addition to having the responsibility for their educational needs, they had responsibility for stimulating the involvement of perhaps a university student or two, an elderly student or two, an elementary student or two, and a secondary student or two, in a creative well-designed way where the teacher would exert effective guidance and help all of these people, it seems to me that would be a fantastically stimulating and satisfying role for a teacher.

Dr. **Hofferth**. It would involve a substantial commitment of money and resources because it would require a number of very well qualified teachers and excellent facilities to go along with it. This would not be your usual informal arrangement.

Maybe I should just go on briefly to a few of the other points. Federal regulation was one point you mentioned—regulation of care. The main effect that regulation has is that it affects the number of children per caretaker. Since the cost of teachers—caretakers—is most of the cost of care, anything that would affect the number of them is going to affect the cost. Therefore, these regulations should be very carefully considered. They are undergoing a process of review at the present time. I am not sure exactly what will come out of it, but these are definitely being reconsidered and I believe recommendations for change will be presented to Congress within a month or so.

Now, as far as the regulations go, a lot of times you hear about the silly requirements for centers. Most of these requirements turn out to be State requirements. Things such as zoning requirements, health requirements, and so on are at the State level. So I am not sure that there is anything that Federal policy could do.

Mr. **Stockman**. Are you talking about the interagency standards?

Dr. **Hofferth**. Yes, the Federal interagency day care requirements.

Mr. **Stockman**. You have been talking about supply and the fact that there is going to be a growing demand for day care or child care services due to increased participation rates by women in the labor force. Is the supply not going to depend to some very great degree on how you define it? I mean, if you put prohibitively high standards in terms of staffing ratios and equipment and a lot of sunlight coming through the windows and so forth, you are going to rather drastically curtail the supply and raise the cost of the supply that is available. What is your philosophy as to appropriate standards and whether we want a continuum of service levels available? Or, do we want to limit it only to the very highest quality child care as defined by the professionals in the field who obviously want to provide Cadillac service to everybody if they induce families and the taxpayers to pay for it?

Dr. **Hofferth**. The Federal Government is paying for a lot of day care for children on public assistance, for example. And it would be undesirable, if not politically impossible, to put them in poor quality care. This is one of the reasons for these regulations. Policymakers want to make sure the care is adequate. However, parents do not necessarily want developmental type of care, which is the most expensive. It involves social services and educational programs for children. Therefore, one suggestion that I have is that there be several types of care, say, minimum standards for different forms of care. This would make regulation more complicated, but it would also allow parents more freedom to choose the type of care that their children get. If they prefer the care to be in a very homelike environment, then there would be fairly loose minimum standards that could be established. Whereas if a center, for example, wants to call itself "developmental", then it would have to meet other, more rigorous standards.

Mr. **Stockman**. Well, we are spending over a billion dollars a year, perhaps even more, for child care services one way or another through the social services programs, public assistance and so forth. Should we be buying only developmental, high quality, $2,500 per child year care or should we be buying the range of alternatives that is available, depending on the wishes of the clients involved?

Dr. **Hofferth**. I would opt for the latter with the stipulation that parents have the knowledge and information to choose the type of care with, for example, the help of an informational referral service. This is a type of service for which the Government might provide funds.

Mr. **Stockman**. I think that unless we move along here we are not going to get through the entire panel. Unless you have any further major recommendations you would like to make, I would like to call the next witness.

Dr. **Hofferth**. No, I will just summarize. It is first of all clear that the proportion of young children with mothers in the labor force will continue to increase, which means that day care will become more important. Second, Federal policies are important and will be important over the next decade. Finally, we should know what the effects of these policies are and will be on both the supply of and the demand for care. They do have important impacts. When thinking of workers, it is no longer sufficient to think of them apart from their families and their family roles and responsibilities.

Mr. **Stockman**. Thank you very much. I think your statement has been very helpful.

Ms. Friedman, would you like to proceed?

STATEMENT OF MRS. KATHERINE EISENBERGER, DEPARTMENT OF EDUCATION, HUNTER COLLEGE, INTRODUCED BY MS. CHARLOTTE FRIEDMAN

[Prepared Statement in Appendix on p. 557.]

Ms. **Friedman**. I would like to introduce Katherine Eisenberger.

Mr. **Stockman**. Excuse me, before you go ahead, we have two other members of the committee here, Congressman Beilenson from California and Congressman Erlenborn from Illinois.

Ms. **Friedman**. I work in the Office of Governmental Relations of the American Association of School Administrators. Here today to testify on the subject of Changing Enrollment Patterns is one of our experts. She is the director of AASA's demographic project, Katherine Eisenberger.

Mrs. **Eisenberger**. It is a pleasure to have the opportunity to speak with you this morning. I understand from the dialog that we have had that you are most interested in policy recommendations and eager to discuss them.

Mr. **Scheuer**. And program recommendations.

Mrs. **Eisenberger**. The first implication or recommendation that I would like to suggest to you as a result of enrollment declines in our public schools is the increasing number of abandoned buildings or idle buildings that at one time were useful school facilities. Currently, we have little funds available within the local district or at the county or State level to allocate toward rehabilitation or recycling of these buildings. I suggest to you, sir, that these are the very buildings that our legislators helped us to construct through construction aid during the post-World War II growth period. It was with Federal dollars and construction aid dollars that they were built. It was with this assistance that they became useful facilities for public education. Once again we need the assistance of Federal dollars, not for the purpose of construction, but for the purpose of recycling, refurbishing, and rehabilitation.

I believe that would be an area that school administrators would embrace.

Mr. SCHEUER. How do you see these buildings rehabilitated?

Mrs. EISENBERGER. Sir, about 5 minutes ago, you described what we call——

Mr. SCHEUER. No. I am an amateur. You are a professional.

Mrs. EISENBERGER. You described what we call a joint occupancy facility. It is a facility that houses schoolchildren within a regular school educational program while simultaneously providing for other social services to be ongoing within the community, such as a senior citizens' recreation center or day care. There is a facility in Atlanta called the J. F. Kennedy facility. It is a joint occupancy facility housing five different social services on five floors. I would call your attention to another facility right across the river in Arlington. It is the Madison School.

The JFK Middle School in Atlanta has a social service wing, a professional wing housing doctors and lawyers in professional suites, a middle school, a recreation floor, a senior citizens' floor, and a cafetorium-auditorium. It has five floors.

Mr. SCHEUER. It is a cafeteria-auditorium?

Mrs. EISENBERGER. Yes. In education, we improvise. [Laughter.]

The Madison School in Arlington was discontinued for public school use as a regular educational facility. It remained idle until it was picked up by the county and now offers day care services as well as senior citizen services.

Mr. SCHEUER. How about something for the teenagers? We are constantly hearing in our district from parents, especially of teenagers who get into a little trouble with their exuberance, that our kids have nothing to do. Give us something for our kids to do after school, evenings, weekends and holidays.

Could part of this school be used as a recreation facility for teenagers, for some kind of sports, or other recreation?

Mrs. EISENBERGER. Sir, when I talk about a recreation facility, I try very hard not to be age-specific. I am very concerned about age segregation and when I talk about recreation, it spans any age group. I see older people who are able to participate in recreation experiences with young people simultaneously. There should not be or need not be any barrier isolating a teenager from what we would typically call a middle-aged person or an older person.

Mr. SCHEUER. Or a younger person?

Mrs. EISENBERGER. Certainly. Another area that I believe is very important is the concept of managing decline; it has direct implications for policy. We, as a society, have a mind-set of growth—bigger is better, new is good, growth is positive. For the first time, historically, we are facing an era in which we are no longer keeping pace with the rapid growth experienced in the past. We have little experience as a society in managing decline. We have two industrial models to look to and they are agriculture and the railroads; and I suggest that the management of decline in agriculture and the railroads was less than we could have hoped for.

Our school administrators are now on the frontier of managing decline. We are viewing education as in the beginning phase of a declining industry. That is decline in terms of numbers and I want to make the point of quantity, not necessarily in quality.

Our school administrators were placed in their positions and selected for their expertise in managing growth. Most of their professional lives and experiences, academic training, and program preparation was during an era of growth. We are now, for the first time, looking at the management of contraction, stabilization or decline. We have little available research to guide us. There were six dissertations completed in the last century, going back to 1878 that deal with the management of decline.

Funds need to be made available for practical research, applied research, and theoretical designs for investigating the parameters and frontiers of managing decline. It is anticipated that decline will not be limited to education only. Other sectors of the economy are experiencing decline also.

The third area I would like to discuss is the concept of age segregation and, as I have already expressed to you, it is an area that I believe is of vital importance. The segment of our society that will be over 18 will outnumber by 5 to 1 the school-age population. By 1990, we will have more people over 55 than we will have in our total elementary and secondary schools. Older people need to learn and understand about young people from other sources than the TV news programs. Young people need to learn and understand and respect the needs of our older citizens. We must devise programs to break down this isolation and the barriers of age segregation that we have currently within our society. The schoolhouse, with its available space, and with its opportunities for lifelong learning, must encourage and bring in older citizens for learning in careers, hobbies, interests, and/or midlife career changes. It presents a natural situation to break down some of the age barriers that currently exist. I would suggest that this be an area of high priority for our legislators, particularly in recognition of the fact that the young—this generation currently in our schools—will be the engine of support that will pull our societal train into the 21st century.

The fourth area I would like to discuss is the typical image of the American family. You have heard from my colleagues this morning that the traditional image of the American family—mother, father, three children, a dog, a cat, and two-car garage—is increasingly at odds with reality. It is estimated that 45 percent of the children born in 1976 at some time during their school years will live with a single parent or in a one-parent household. Forty-five percent!

The conceptions that we have held about the traditional American family has formed the basis for our policy and planning for the public schools, our education programs, and curriculum. Revision and redesign of curriculum and program within our public schools to meet the realities of changing family lives is imperative. I suggest——

Mr. SCHEUER. Can you just elaborate on that for a sentence or two?

Mrs. EISENBERGER. The programs and materials that we have in our public schools display the image of the American family as a traditional one that I have just suggested to you. Increasingly we are learning that this image is at odds with reality. We need to redesign and revise our curriculum and programs in terms of the way we portray the family. If we can agree that women are defer-ring marriage and child rearing, then our curriculum needs to reflect this change. It would be of great benefit to our young people to provide experiences in personal financial learning, in training and counseling to prepare for living an independent, single life for a number of years; and in understanding complex human relationships. These are all experiences that need to be incorporated into the curriculum at the secondary schools, given the realities of what our high schoolers do when they leave our schools.

Another area that I would like to touch, and the fifth, is the concern over the extension of the schoolday. You have heard my colleague discuss the increase in the numbers of women who work, the dual-parent working family, and the single-parent family; and the increased need for daycare, nursery, preschool, extended school services. We all knew the "latch key" child of the 1930's—the "latch key" child is back again. Given this reality, the extension of the schoolday into after-school activities, the incorporation of daycare into the public school facility, the opportunity to mix daycare, extended schoolday, nursery, recreation, and senior citizens under one joint occupancy facility is a reality for the first time. With decreased enrollment and available space, the schoolhouse is a logical place to provide this series of services. It is located in a neighborhood. It is part of the fabric of a neighborhood in urban and suburban settings. The facility is erect, structured, and there. The available personnel are intact. And I suggest to you that we can extend the concept of lifelong learning from cradle to grave.

Mr. SCHEUER. Would you include in that joint occupancy facility a community health clinic?

Mrs. EISENBERGER. I would include in that community facility whatever the needs of that particular neighborhood and community would be. A health facility, an outpatient clinic—all of those would be——

Mr. SCHEUER. Legal aid office, perhaps?

Mrs. EISENBERGER. Absolutely. All of those would be included.

Mr. STOCKMAN. It seems fairly obvious and self-evident that this would be a good thing to do. What are the deterrents or the obstacles to any kind of movement in that direction? Maybe there is some movement in isolated instances, but it is my observation that we are utilizing our school plant even less, rather than more, despite the growing excess capacity, vacancy and so forth. There must be some institutional policy, or informal barriers that could be identified and that we should consider.

Mrs. EISENBERGER. Yes, a number of them.

Mr. STOCKMAN. Would you mind very briefly identifying some of them?

Mrs. EISENBERGER. Absolutely. In our society we have little interagency, intermunicipal cooperative planning. We all seem to develop our own specific fiefdom and then hold and protect it. This, I believe, is part of our culture. We cannot continue to do this, for we run the risk of squandering our scarce resources in duplication of services in almost every area.

We need to develop forms of providing cooperative planning. Perhaps this would be a structure that would fund the school district in terms of recycling that building and provide the incentives to encourage municipal tenants and social service agencies to become part of it.

Currently, the school districts' hands are tied. In many States they cannot rent or lease excess facilities——

Mr. STOCKMAN. That is what I am getting to. Now that is a legal barrier.

Mrs. EISENBERGER. That is—we can discuss institutional barriers, legal barriers, and human barriers, but the legal barriers—many are prohibitive. You cannot rent school space or lease it, you can sell it only by referendum in some areas. In some States, you can lease, but you cannot sell. In other areas, you can do whatever you wish.

Mr. SCHEUER. Of course, one very simple way to do this is to offer various congressional incentives, for example, funding support. It could possibly be conditioned on a State or a city or a county putting their legal house in order and making these things possible. If the incentive is sufficient, that will put their legal house in order.

Mr. STOCKMAN. Do you detect any movement in that direction at various places in the country? Obviously, if the taxpayers are paying off a bond on a half-empty school, it might be in their interest to find some way to contract out space or even a whole elementary school that they might close down. Is any of that happening?

Mrs. EISENBERGER. Yes. I gave you two examples of areas where there were joint occupany facilities and cooperative planning.

I can cite glaring examples, however, of the other. I can cite communities that have empty schools sitting idle—invitations to vandalism and a blight on their neighborhood—while two blocks down the road a senior citizens' recreation center is being constructed.

Mr. STOCKMAN. Well, that may have something to do with Federal programs. We have 1,200——

Mrs. EISENBERGER. Exactly.

Mr. STOCKMAN [continuing]. Categorical programs and there is part C of some categorical program which provides brick and mortar money for a multipurpose senior center, but it has nothing to do with everything else going on in HEW. Would you say that we might take a pretty thorough look at all the brick and mortar subparts in all these categorical programs and also conduct a survey of the space already available and that space which will be increasing, as I noticed from Dr. Fishlow's written testimony, in future years as those enrollment trends continue to decline. It would seem to me that one of the major things that this committee might do is to request a survey of brick and mortar money for social services type endeavors.

Mr. SCHEUER. I could not agree with you more, especially in the field of health because we know that our health costs are absolutely exploding. The extended age of senior citizens means that we are going to have enormously increased health costs and health services. Hopefully we will be able to shift services from tertiary hospitals where we are totally unable to control costs and to more limited-care facilities that are, hopefully, community-based and emphasize preventive health care. I cannot think of a more ideal way to actually save taxpayers' money and also improve the quality of services to these elderly people. The elderly would find it a pleasant and enjoyable place to come for preventive health services without any capital investment at all.

Mr. **Stockman**. Without carrying our digression too far, I just want to put on the record a classic example that occurred in my district. I have a fairly affluent town in which the senior class in the public school system numbers 600 and the kindergarten numbers 175. It is just an incredible enrollment decline. They just tore down a structurally sound elementary school two blocks away from the CETA office. But since CETA is expanding so rapidly, they needed more space so CETA bought a bankrupt Robert Hall store and spent a fortune renovating it for office space. Now there is a classic example of the madness that we ought to look into.

Mr. **Scheuer**. I could not agree more.

Mr. **Stockman**. Excuse me. Go ahead.

Mrs. **Eisenberger**. I would like to suggest one more thing. The Federal Government has always supported public education and particularly in categorical areas. Our legislators at the State level have always recognized the need for education and learning. Our local citizenry has, out of their pockets, supported public education. I would like to suggest that we have a new category for categorical aid and that category is adults. We have provided for learning in K-12 instruction at the local level, the State level, and the Federal level. The new category that I would like to suggest in terms of inclusion into the regular school day based exactly on our ADA or ADM, as in our State and local areas and with the support of the Federal Government, is the inclusion of adults. There is everything to be gained by having adults in our regular school day on an available space basis sitting next to a youngster in a classroom. We, I am sure, as educators, could have provided these experiences and the expansion of the concept of life-long learning years ago had we not been prohibited by the space and overcrowded conditions of the post-World War II period. We now have the opportunity to provide that experience. An educational experience not only for the old or for the middle aged or for the young, but an experience that should transcend one's age: a lifelong learning.

So I would like to suggest that we investigate categorical aid in the category of adults.

Mr. **Scheuer**. Are you suggesting we have adult education merge with the regular elementary and secondary education programs?

Mrs. **Eisenberger**. No. I see a very specific need for adult education, specific as it is. I also see a new category. We have title I, title II, title III, and all of the different categorical aids underneath it. I am suggesting the category of "adults in day school."

Mr. **Scheuer**. If an adult wanted to attend a European history class, they would enroll in the high school European history class?

Mrs. **Eisenberger**. That is right.

Mr. **Stockman**. Does that complete your statement?

Mrs. **Eisenberger**. If I could provide any additional information to you or answer any additional questions, I would be glad to.

Mr. **Stockman**. We are going to open the entire panel up for questioning as soon as we finish. I want to thank you for your statement. I think you have given us some very valuable suggestions and I hope we especially pursue the one line of thought that we were following there.

Dr. Fishlow, would you like to proceed?

STATEMENT OF DOCTOR HARRIET FISHLOW, OFFICE OF ACADEMIC AFFAIRS, UNIVERSITY OF CALIFORNIA, BERKELEY

[Prepared Statement in Appendix on p. 568.]

Dr. FISHLOW. I work for the Administration of the University of California and I am a demographer by profession. My remarks were designed more to set the stage for the discussion of demographic change than to suggest specific policies as Mrs. Eisenberger did. However, I do have some policy suggestions which I will give to you at the end of a few remarks about the demographic changes that are coming.

I see the changes not just as a decline, although the decline is now upon us and is certain, but rather I see it as a series of fluctuations, both national over time and across space from place to place at the same time. I would like to set the stage for that, if I might.

We are all aware by now that the United States experienced a high level of births for 18 years from the postwar year of 1946 to 1964. The children born at the end of the baby boom are now in high school. As we have heard, births began to decline in the early 1960's and fell nearly every year to the mid-1970's. That decline amounts to about 25 percent, from the early 1960's to the mid-1970's. Only now does there appear to be the beginning of an upward trend so long expected by demographers.

Because of the large numbers of young women in the population, births are expected to rise into the 1990's. Even with a very modest fertility desire of two children per family, which is very modest by American historical standards, by the mid-1980's the number of births could well equal the boom years of the late 1950's or very nearly so, depending on annual fluctuations.

First, I would like to talk about the fluctuations arising from births that have already occurred. I used HEW's projections and modified them by my own observations on more recent birth data and this calculation shows a decline at the elementary level, as I think probably has been mentioned here, to 1983. The decline from the peak year of elementary enrollment, 1969, will be about 16 percent. At the secondary level, the decline in enrollments will continue until about 1990. The peak year for secondary enrollments appears to have been 1976. By 1990, all things being equal, the numbers in high school should be about 25 percent less.

The Bureau of the Census has projected future fertility using several different assumptions about completed family size. The one that appears most reasonable is series II which assumes two children per woman on average and this, as I mentioned before, is on the low side if one considers past American fertility. The Series is based on survey responses asking young wives the number of children expected and it also assumes timing patterns will not change drastically.

Since, for various reasons, series II seems most reasonable to me, as well, I used that for enrollment projections past 1983 for elementary schools and past 1990 for secondary schools. If time permits, I will make some observations on postsecondary education as well.

Now, if series II projections approximate future reality, what long range fluctuations can be expected? At the K-8 level—that is elementary school—the decline will continue through the early 1980's. The low number should hold steady for a couple of years, but thereafter, growth is expected. Assuming that the fertility projections are accurate, growth should be about 12 percent between 1985 and 1990 and another 6 percent in the following 5 years. It will be about 20 percent between 1985 and 1995.

In 1995, there will be about as many children in elementary school as there was in 1970, close to the peak year for elementary schools, but then there will be another decline. At the secondary level, the steep 25 percent decline from the mid-1970's to 1990 will be succeeded by a rapid increase, bringing the total back to about the peak 1975 level at the end of the century.

One thing I want to emphasize is that the preceding figures are all national figures. Local changes will occur in their context, but will vary. For example, I would expect steeper declines and more modest increases in parts of the Northeast, Central, and mid-Atlantic States and the converse for the West and Southwest. Local areas within each region will differ also. Therefore, my first suggestion under strategies for dealing with these fluctuations, because they are fluctuations rather than just a decline, is to improve the capacity to predict them at the State and local level. We cannot deal with either the decline or the almost certain increase thereafter—not certain yet, but it seems to me that it shall be since births have already started to rise in the last year or so. We cannot deal with these changes unless we know at a very specific local level what this is likely to be. In some areas, high school population may decline 50 percent. Probably that would be the case in the school district mentioned earlier. I do not know where that is. In California, it would be less. Our own population unit does not predict that kind of decline for us, though there will still be some decline.

Mr. STOCKMAN. Could I interrupt you just one second here?

Dr. FISHLOW. Certainly.

Mr. STOCKMAN. I am looking at the series III projection that you have in your table 3 and that, of course, there is never a recovery. You stay at the lower levels for elementary that were achieved a few years ago and for high schools that were achieved in 1975. Now, the fertility assumption between series II and series III, the range is not that great. It is 1.7 under series III, which has prevailed for the last few years and it is 2.1 under series II. In other words, you are dealing with a relatively narrow change or small change in the variable, but you get a 6 million difference in the number of children in elementary school by 1990 or 1995. In one case you get no change in terms of enrollment trends and in the other you get a steep recovery. We have been having discussions all week concerning what we can do to improve fertility projections or anticipations and right there is a classic example because you have two vastly different outcomes in terms of what we ought to be doing in the interim to prepare for that.

Dr. FISHLOW. Well, one remark which I make to the administrators at the university where I work is that there is really no way to accurately predict the future. There has to be a range. The difference between 1.7 and 2.1 is not that small, actually, 2.1 is 24 percent greater than 1.7. But the fact that we have been at one point for 8 or 9 years is confusing and it is a confusing way to use those figures. The 2.1——

Mr. Stockman. I know it depends on the exposure, right.

Dr. Fishlow. Well, the 2.1 is a life long number and the annual figure—the 1.8 or 1.9—is a hypothetical construct based on a single year's performance. It can be very confusing and beside the point. For example, in 1957, I think, the annual total fertility rate was 3.5 or .6——

Mr. Stockman. But the cohort rate was——

Dr. Fishlow. But the cohorts involved will not achieve that, so that the fact that we are very low now seems to be connected with a number of temporary factors, not least of which is the economy.

Mr. Stockman. Timing.

Dr. Fishlow. The timing patterns. In the larger work which I did for the National Institute of Education, I discussed at great length why I think approximately two children on an average is correct. That is just my judgment.

Mr. Stockman. We have had a dramatic decline in the annual rate, say, from 1962 to 1975.

Dr. Fishlow. Yes.

Mr. Stockman. You are suggesting that there was a much lesser change in the cohort rate, life cycle cohort rate. Do you have any idea of what that might be in numbers?

Dr. Fishlow. Yes; I do. It is still a considerable decline even on the cohort side. The cohort of young women who were producing children around 1960, which was a benchmark year in the baby boom, are women typically from the birth cohorts of the 1930's. It looks as if those cohorts will end up, on an average, having produced three children per woman. Of course, there will be differences amongst themselves by the usual social variables—education, race, and so on, but three for the entire cohort, or nearly three, which is considerable for modern, Western civilization.

It looks as if the cohort of young women now of primary reproductive age—that is, 20 to 29—will probably end up with about two children. That is a very large drop.

Mr. Stockman. Thirty-three percent drop?

Dr. Fishlow. Yes. Predicting the lifelong fertility of women now who are young is not something I would like to be held to in 10 or 15 years. However, it looks as if that will be the case because, for one thing, what they say always turns out in the aggregate to be a fairly accurate predictor of what will happen.

Mr. Stockman. Yes.

Dr. Fishlow. Naturally, conditions can change. But my feeling is that two is about right. Educated women and many women I come in contact with, whom I work with at the university, speak of one or two. But we have a very large heterogeneous population in this country, and two seems to be the best guess.

Mr. Stockman. Go ahead. I am sorry.

Dr. Fishlow. I made some suggestions based on these fluctuations. One is that we improve the way we predict. I suggest that there be some cooperation between State authorities, either in the education or in population units, and the Bureau of the Census in order to improve the current state of small area forecasting. It depends a lot on local judgment. It would mean training persons or providing training manuals in basic demographic techniques to school districts and having them combine these with local judgment. One has to be—in a small area—in the place to decide what is going to happen 5 years down the road. You cannot just do that with mathematical models.

While many of the larger school districts have staff who project enrollments, usually by the grade progression method, combined with local birth rate estimates of future kindergarten entrances, few are equipped to estimate the range of probable enrollments as long as 5 years, much less 10 to 15 years in the future.

The Bureau of the Census has done some work in small area estimation which I am not too familiar with, but which I heard of when I called up and down my own State to find out what the school projection methodology was in the larger school districts. It is a small area census in a project called the Dual Independent Map Encoding File or the DIME project which enables one to map a census survey into any area you choose to code it to. This capacity would at least give school administrators a knowledge of who is already there, including how many children under the age of 5. Combined with other techniques, such knowledge might give them some idea of who is likely to be there 5 or 10 years down the road.

The value of such knowledge was brought forcibly to mind in a flyer from my son's school, which is a kindergarten to third grade school in Berkeley. They had projections for next year with 70 in the third grade; 60 in the second grade; 50 in the first grade. At the kindergarten level there was a fight between the school board and the principal in which the school board suggested 40 and the principal projected 60 at the kindergarten level. None of these people, as far as I could tell, really knew how many 4-year-olds were in the district. So some kind of survey technique would be very useful. This could be done on a pilot project. I have discussed that with people in the Population Research Unit in California and it is possible, but they do not have the funds to do it.

I made a number of other suggestions in my paper, none of which are novel and none of which are at the detailed level that persons actively engaged in education, like Mrs. Eisenberger is, could provide. Just to briefly mention them, these suggestions include the availability of advice to school districts, both political and economic, on the sale of school buildings and aid to teachers to find different employment. The latter is particularly dear to my heart since I cannot envision the school building problem as quite as serious. It may be, but that is not the way I see it.

Mr. STOCKMAN. Should we have some kind of adjustment or assistance program for elementary and secondary education personnel?

Dr. FISHLOW. Well, some—I am not as specific as I am about the demographic techniques, but it does seem to me that some sort of program, whether federally or State based, to inform current high school teachers of the coming very sharp enrollment decline in the 1980's so that they know that many of them, including schoolteachers with long tenure, are going to be laid off in that period. They then will at least have a chance to prepare themselves now for alternate employment. Training programs could be provided and various job finding aids, such as help in writing resumes. This is important because many people who started out teaching in the public schools went through a local training program in a local college and got a job. They have stayed there and do not have a very good idea about what other opportunities are available. So help like that would be very useful.

But we have to keep in mind the fluctuations. There has been work by Peter Morrison, whom I was told spoke to the committee earlier, that showed that there is going to be a need for increased numbers of schoolteachers in the 1980's. Certainly if my demographic predictions are accurate, there will be. Then there are other factors involved as well, like the stock of schoolteachers falling off.

My suggestion is not a new one. I remember it when I was in teacher training in the 1950's. The suggestion is to have a post-baccalureate 1-year program or post-master's level 1-year program so that students do not have to make that commitment for 4 years in advance. They can judge the market more closely and some one with an accredited degree can then go into training and become a schoolteacher. I think that might be the best way to handle the upturn because the upturn, if my fertility projections are correct, will be followed again by a downturn. So we want to be as flexible as possible.

Mr. **Kildee**. On that, Mr. Chairman, I have a question.

Mr. **Stockman**. Yes.

Mr. **Kildee**. How closely have the teacher training institutions been following demographic progressions? They have not had a good track record in the past.

Dr. **Fishlow**. Well, I do not know that too specifically. I do know that every institution of post-secondary education that I have ever come in contact with is very concerned with keeping its enrollments up. And that——

Mr. **Kildee**. Whether or not there is a market for the skills they produce?

Dr. **Fishlow**. With the exception, of course, of the Unversity of California which is more responsible in this area. [Laughter.]

Mr. **Kildee**. You know, it is incredible. I was chairman of the Education Subcommittee of the Appropriations Committee in the Michigan Legislature, and we were warning the teacher training institutions, including some of the most prestigeous ones, that they were producing teachers for students who would not be there. They were just hellbent for production and all of a sudden people were walking around with bachelor's degrees and teachers' certificates tucked in their back pockets and looking for a job in a foundry. It is ironic that some of the very institutions which are strongest in demographics continue to produce skills for which there will be little demand. The left hand was not advising the right hand at all and when we find within the same institution a lack of communication, you must worry that in government itself that the same lack of communication exists between agencies. I think someone in earlier testimony mentioned that there should be a study of school boards and school districts so as to adequately make projections of numbers of students. Many school boards have not made use of data that presently exists. School boards in my district were not watching the birth rate that was available at the courthouse and basing projections on actual data. There are buildings which were built because of this failure that are being emptied right now.

I think that somehow there has to be some coordination between the projections of population growth or nongrowth and the services we deliver at every level, and education, I think, has done a deplorable job in planning on this.

Dr. FISHLOW. I am not as familiar with it at that level, but I have not seen much evidence of planning. The popular media has played up the birth rate decline and that has caused some school board members to notice it because they read about it. But they very often do not know what is going on in their own district, although some of the districts, as I mentioned, do some kind of enrollment projections. Very often politically, those are unpalatable. There is someone who does projections whom I spoke to and saw his figures for the Berkeley schools and he used a method which used the birth rate in Berkeley to help project kindergarten enrollments. That is a difficult thing to do but his method has worked over time and the difference between the births in 1961 and 1962 and those in the year I looked at, which was 1974, were considerable. The birth rate in 1974 was 40 percent of the birth rate in 1961. When he projected kindergarten enrollments based on that, it was not very well accepted and no changes in plans were made as a result. It is not always easy to get people to recognize the obvious until it really hits them.

Mr. KILDEE. I really think that 8 or 10 years ago when changes began to take place in the school enrollment that if people had just taken their car and driven down to the courthouse to look at birth records, projections of enrollments might have been better. School people did not do that. They were not doing anything at all. They began all of a sudden to realize that fewer students were coming in, and they began to complain to the legislature about declining enrollment which to them meant less State dollars, but they were not even doing anything as scientific as going down to the courthouse to check records. At some agency, some level in government, there has to be some type of coordination and planning. This may have prevented the school buildings which were built that were unnecessary.

Dr. FISHLOW. Or remodeled for that matter. The districts where I live are remodeling schools for earthquake safety, some of which probably ought to be closed. But it is a very serious or difficult political situation that goes beyond the technical matter of anyone projecting students. When there are interests involved, people do not want to listen.

Mr. KILDEE. It's like Ibson's play, "The Enemy of the People." Very often people are afraid of becoming the enemy of the people if they expose the truth.

Thank you very much.

Mr. STOCKMAN. Thank you.

Dr. FISHLOW. I had one remark to make on post-secondary education, if I have the time and if I an not cutting into anybody else's talk.

Mr. STOCKMAN. Fine.

Dr. **Fishlow**. And that is that the pool of traditional age students will decline nationally 25 to 20 percent depending on whether you project 18- to 21- or 18- to 24-year olds.

Mr. **Stockman**. Excuse me. Why would the high school decline be more precipitous or steeper than the elementary school decline? I think you had 14 to 18 percent elementary and——

Dr. **Fishlow**. Because it is a smaller span, so that if you have a very sharp——

Mr. **Stockman**. Oh, OK. Right. That is contracting, right.

Dr. **Fishlow**. If you project 18- to 21-year-olds, it is exactly like high school and the decline is 25 percent between 1980 and 1995. But if you use 18 to 24's which is more common in this kind of thing, it is 20 percent.

Now, within higher education circles, one often hears the idea that demographic decline will be ameliorated by a rise in the rate of college attendance. Of course this could happen, but from my point of view it is extremely unlikely.

Historically speaking, the rise in the rate of attendance has been more important in the rise in college enrollment than population growth. Even in the 1960's when the population of college age rose more rapidly than at any time since the mid-19th century, the rise in the rate of attendance was more important in increasing college enrollments. The numbers of enrolled rose 8 percent a year during those years.

Mr. **Stockman**. Do you have the numbers on the declining or the reversal that has occurred since the peak year on attendance rate, which was in the early 1970's was it not?

Dr. **Fishlow**. I do not have that with me. It has drifted off.

Mr. **Stockman**. Yes.

Dr. **Fishlow**. There are various ways of measuring it.

Mr. **Stockman**. Right.

Dr. **Fishlow**. I have used 1975 as a benchmark year because the changes discussed are so large that, from my point of view, the small decline in the early 1970's which seems to have begun to go up again, is irrelevant and just confuses the issue.

The point I wanted to make is that at the present, close to a one-third of that age group—there was about 35 percent in 1970 and there is a little less now—attend college. If we assume, and I think it is reasonable, that the more favored sections of society now attend college at close to a maximum level, given ability and the needs of the job market and that the less favored half improves to that level by the year 2000, which I think is perhaps optimistic, the rate of college attendance would be 50 percent in the year 2000. This was done by State figures on the population which goes on to college and graduates from high school. These figures indicate a rise in the rate of attendance of about 1 percent a year, which is less then half the rate of decline in the numbers of that age group in the 15-year period from 1980 to 1995. So I believe a decline in post-secondary education in those years is virtually inevitable even if we do manage push up the rate of enrollments somewhat. However and this is a remark I made most forcibly in my own work at the university—there is very likely to be a very sharp increase thereafter—after 1995. Now that is a long way down the road, but colleges are expensive to build and one of the unofficial remarks sometimes made—it certainly is not admitted as official policy—that if we experience a very significant decline in the enrollments, we might close one of our campuses or significantly cut out programs.

I would caution people who have the responsibility for this to be very careful about cutting out something now that would be very expensive to build up later. Therefore, if we have a choice of policies, I would suggest using those policies which are more like a holding action rather than doing away with schools. I know that already there are small colleges in trouble with enrollments. This will only accelerate in the coming 15 years. If there is any policy that will help keep some of them afloat, I think we would be grateful for it around the turn of the century.

That is all the remarks that I have to make.

Mr. **Stockman**. Thank you very much. I am going to have a number of questions later, but why don't we finish with the panel and then we can open it up to everyone.

Dr. Spencer?

STATEMENT OF DR. ROBERT C. SPENCER, PRESIDENT, SANGAMON STATE UNIVERSITY, SPRINGFIELD, ILL.

[Prepared Statement in Appendix on p. 594.]

Dr. **Spencer**. Mr. Chairman, not being a specialist on population I am uncertain how I can add to the contributions already made by the demographers and sociologists on this panel. It happens, however, that I have witnessed and experienced some consequences of the things we are talking about today, namely, the impact of population shifts upon the planning and management of higher education. In particular, I speak of a new institution of which I have been privileged to have been founding president these past 9 years. Hardly had Sangamon State University opened its doors in the fall of 1970 than it was faced with reduced enrollment expectations, changed planning strategies, altered schedules for completion, and a perceptible redefinition of its mission. Under such circumstances part of the leadership task became the "management of decline" as well as institutional development. It is an experience which many institutions are or will be going through in the years ahead as higher education comes to be a "no growth industry" in many parts of this country. Let me tell you a bit of the story.

Sangamon State University is today about half its planned size for the current academic year, and in the 1980's will be about one-third as large in headcount and one-fourth in full-time-equivalent student enrollment as its original planners conceived it in the late 1960's. Such reductions in enrollment of an ongoing institution, wherever located, would be disastrous indeed. It has a real but less visible impact upon an institution which is new and growing, but will not achieve its planned size in the foreseeable future.

In this situation we are not alone. Many colleges and universities are already adjusting to the demographic realities of the 1970's and 1980's, to leveling or reduced enrollments, to an older and atypical undergraduate student body, to underutilized physical facilities, and to shifts in the marketability of curricular options.

Sangamon State University, however, optimistically came off the drawing boards of Illinois' educational planning and coordinating agencies less than 3 years before these demographic changes began to hit all of higher education. Generously funded from the start, SSU did not have the lead time, if you will, to establish its reputation and its clientele, and to stabilize its program offerings before its own new depression hit. That we are a going enterprise today in spite of these difficulties testifies to the resilience of the faculty and staff, to the resourcefulness of the internal planning process, and to the continued confidence of our several external boards and agencies, including the legislature. For better or for worse, our setting in the State capital of one of the Nation's great States has given SSU an earlier opportunity to test its mission and programs under public scrutiny.

Before continuing, let me explain briefly just where Sangamon State University fits into the array of postsecondary institutions across the county. Clarifying that point will also make it easier to understand some of the long-term difficulties which a number of new institutions, as well as many older ones, will face in the years ahead. The 350 State colleges and universities in this country now serve some 50 percent of all baccalaureate students in public sector senior institutions. In the postwar years these were the most rapidly growing institutions of all, and successfully absorbed much of the enrollment expansion in American higher education—sharing this expansion with new public community colleges as it came online throughout the 1960's and 1970's. This growth was engendered not only by the postwar baby boom, but also by the ideas of expanded educational opportunity which generous funding, a flourishing economy, heightened expectations of social mobility and personal growth, and in some instances opportunity and growth, which local pride and boosterism had sought.

Within this astonishing record of educational growth, the older land-grant institutions and many private colleges and universities also expanded. Educational planning boards and agencies sponsored much of the growth, but much also occurred as tuition increases and generous public funding permitted ad hoc institutional expansion in response to enrollment pressures. Sangamon State University is part of a subgroup of these new, planned, public institutions. They were founded in response not only to regional demographic changes, but also to the growing number of community college graduates seeking admission to senior institutions for completion of baccalaureate studies. America has never been without a great public faith in education at all levels—as an equalizer of opportunity, and as a panacea for a better world. These years were characterized by untested and unchallenged assumptions about the value and utility of nearly universal postsecondary education in a democratic, industrial society.

Sangamon State University and Governors State University were designed primarily to meet the new community college and graduate/professional student markets in Illinois. In Florida four of these upper-level institutions were started, and in Texas, eight—either as freestanding institutions or as branch campuses of existing universities. New York had two, now one, as did Michigan. For the most part these upper-level institutions were well located in urban or suburban settings and had styles which make them academically as well as geographically accessible to an increasingly heterogeneous student body. They had, in addition, close affiliations with nearby community colleges.

Among the public 4-year institutions founded during this era were two in New Jersey—Ramapo and Stockton State Colleges; Oakland University and the Grand Valley State Colleges in Michigan; half a dozen in California; Evergreen State College at Olympia, Wash.; and an equal number of new or greatly expanded 4-year campuses in New York State. Wisconsin added branch campuses to its land-grant system at Green Bay and Parkside, while the University of Illinois branched at Chicago Circle, and Southern Illinois University at Edwardsville.

More than being new or emerging institutions, these institutions had another very significant experience in common. They were founded, or were expanded at a time of unprecedented social ferment and unrest in America. The implications for educational leadership and institutional management were soon clear: student and many faculty, intensely unhappy with existing social institutions and with the quality or performance of America's political and corporate leadership, began testing new areas of dissent and new lifestyles. The new universities about which we are speaking recruited many of their faculties from the Nation's major graduate schools and from some of the best and most troubled campuses during this period. Some institutions became, in short, testing grounds not only for most appropriate curricular changes and carefully designed innovative programs, but also for the ideologies of disenchantment and liberation, for alternative lifestyles as well as experimental programs.

There were two major consequences for university leadership and management from this change in the environment of higher education and the troubles in the world outside. First—and particularly in public sector institutions—policy and administrative decisionmaking, whether at the campus or higher levels, soon had to comply with new levels of participation by campus constituencies. This was in turn accompanied by new levels of openness for public meetings and internal processes. Second, on many campuses the petition, the referendum, the electoral politics, and populist rhetoric became for many faculty the standard of academic legitimacy rather than appointed or traditionally selected consultative bodies dominated by tenured faculty and seasoned academic administrators. Inexperience and political skill became more viable than experience and practical judgment in such settings. Finally, to older measures of fitness for academic appointment or reappointment, scholarship, teaching, and public service were added either overtly or otherwise, new tests of sincerity, ideological purity, or sensitivity to group norms of the alienated or the newly liberated.

On older campuses with stable internal governance, with established standards of quality in teaching, scholarship, and public service, these same pressures and constituencies could and very often did provide healthy stimuli for debate and solid contributions to needed educational change and more responsive bureaucratic styles. An on going academic community with a sense of its own worth and valued academic traditions will manage these forces of change differently than a new one struggling to establish its reputation and credibility, its teaching styles, and those standards and internal procedures which free its staff and faculty for serious academic tasks.

But the new public institutions of the 1960's and 1970's, as well as many older public institutions, have another hurdle to jump. That hurdle is set by the array of technical reporting requirements of legislatures and coordinating, governing, budgeting, and auditing agencies. These require that public colleges and universities regularly prove that their performance is worth the cost. Accompanying these very understandable demands for accountability is a growing suspicion that the promise of universal higher education may not be bringing about the better world; but that, indeed, it may be bringing only more unrest, confusion, and alienation from what good was left of the old world. More recently, too, Johnny's college-educated older brother and sister have been found less literate and informed than expected, despite the vast resources devoted to their training and development.

Doubts about the value of higher education seldom lead to serious discussion about the quality or rigor of what should be taught, about minimal educational requirements for citizenship in a free society, or the purposes of what we do as educators. The enterprise is too complex, diffuse, and questions of quality too subtle, to permit that luxury. Instead we are asked to report institutional output and performance by quantitative measures. This is calculated in many ways: by unit costs per credit hour of instruction, by academic program costs, by faculty workloads, by the research productivity of faculty, by the employability of new graduates, and by compliance with affirmative action guidelines—to mention several. For example, with affirmative action guidelines, institutions are required not only to be in compliance, but also to report continuous progress in providing career and employment opportunities for women and minorities. Lack of progress, from whatever cause, could be construed as a flaw in institutional performance. Over a period of 1 year, for example, our institution files required 120 or more reports to a total of 7 major external agencies, and 35 voluntary agencies or institutions in addition to telephone and personal inquiries. Those reports and obligations occur regardless of institutional size.

The required reports are received and studied by a growing number of central staff specialists and experts in assessing parts of the whole. Because internal resources also must be developed to meet external reporting requirements, all public institutions have added to their administrative overhead costs the necessary technical machinery and personnel to survive. This, in turn, adds further to costs and is a special burden on the small institution which has few economies of scale to offset the investment.

As important as the cost, however, is the impact of external reporting on management. More and more professional people within an institution come to understand less and less about the entire institution's operations and purposes. Technical staff loyalties, moreover—like those of many faculty—are directed as much to colleagues and peers outside the institution as to those within from whom the larger picture might be understood. Finally, the closer one gets to the teaching faculty, the less these external reporting obligations and technical requirements are understood or tolerated.

To return to the effects upon higher education of demographic changes one can assess the impact of this last and most technical requirement of external reporting upon management. It is one which tends to fragment further the attention and perspectives of central decisionmakers, leaving untended some educational agenda requiring serious study and the commitment of leadership. Few reporting documents, in other words, are decision documents. Most convey technical information to specialized personnel.

I have called the pattern of management under the condition described here as perforated decisionmaking. It is perforated because of the necessary fragmentation of data on institutional performance and the relentless deadlines of external agencies; it is perforated because, while internal governance is highly participative but seldom deliberative, occasions are seldom available to discuss with legitimate internal constituencies the questions and problems of an institution's performance before time runs out; and it is perforated, finally, because external agencies and their professional staffs have too frequently come to rely upon data of this kind more than upon the genuine accomplishments of an institution's faculty and programs as expressions of a whole educational enterprise.

Please understand that I am not discounting the need or value of detailed examination of institutional performance. What I am concerned with is the loss of purpose and perspective because the working environment has become so fragmented that it is difficult to assess responsibility or to prescribe remedies under these conditions. The weakest excuses for failure of institutional performance are procedural or technical; the strongest are substantive and personal. Under the conditions described here the former tends to be substituted for the latter in heavily regulated public sector institutions. Add to this the requirements of reallocation and retrenchment—the management of decline, if you will—and there is almost no way that decisionmaking can proceed smoothly. And it is inevitable that central administration in many public institutions will find it easier to seek technical, political compromises rather than to make sound educational decisions.

With maximum feasible participation mandated by both internal constituencies and many external agencies, too much energy and skill must be devoted to building relations with constituencies and seeking consensus. When everyone is in charge, one might say, nobody is in charge—although formal responsibility remains the same. Moreover, shifts in population and college and university enrollments in years ahead will undoubtedly continue to cause high anxieties for faculty and staffs as they seek to protect their status, economic benefits, curricular priorities, and professional identities.

Mr. Chairman, rather than make immediate policy suggestions for this committee I have spoken to the conditions for decisionmaking which many colleges and universities, particularly the newer public ones, find themselves in as demographic changes force shifts in the size and mission of many institutions. In the long term one can probably say that America's public educational establishment is overbuilt in places, and it is very probable that—barring sudden new national educational efforts like that provided in the late 1950's and 1960's by the post-Sputnik era in the sciences—the levels of support enjoyed in the past cannot be sustained in the future.

In my judgment the greatest contribution which could be made in this situation would be for this body and others somehow to sponsor an examination of our national educational priorities in light of the need for sustaining and renewing one of the world's last open, free, democratic governments. Our founding fathers and many observers of American history have shared this concern. We have no source other than an enlightened and educated citizenry from which to draw our future Congressmen and leaders, and other public servants—those who represent us and who govern. The demographic realities of the late 1970's and the 1980's provide an opportunity to set such an agenda as the soundest preparation for the future of this country.

Such an assessment of national educational priorities would recognize many good things which are already being done by our public and private educational institutions. The paralysis and stalemate which make institutional leadership and management so difficult could be reduced if we possessed clearer prioritites and purposes. Authority and participative mechanisms can be clarified around acknowledged purposes. To stimulate recovery of purpose in the relationship between education and the survival of a free government in a highly technical, rapidly changing society in a world fraught with conflict, could be one notable outcome for the concerns of this committee.

The conditions of management and leadership described here will affect most institutions to one degree or another in both the public and private sectors of higher education in the years ahead. Survival for some during this period of relative decline or steady state will depend upon several things: geographical and transportation access; an adequate range of degree and program options; the historical legacy and academic reputation of the institution; a sense of mission and institutional pride arising from its accomplishments and shared purposes; and, finally, external support which returns flexibility and a measure of discretion to hamstrung institutional leadership. It will be found that strengthened leadership will yield stronger internal governance and reduced stress and confrontation when it is known that the buck stops where it ought to, and not in external agencies.

The possibility exists that Sangamon State University will meet these conditions and will be given continued support, despite its drastically reduced final size and relatively steady state the next few years. Many of us also believe that it will achieve a reputation and usefulness appropriate to its setting in the State capital in central Illinois. Looking at the future cynically, one might be assured of future students in light of the growing tasks of goverment in the years ahead. If that is the case, SSU will bear its share of responsibility that the bureaucracy be well educated and capable of the tasks it will face.

Mr. Stockman. Is that not where Springfield is? [Laughter.]

Dr. Spencer. We are located in Springfield and if it were not for the 15,000 public servants and many professionals from our big programs in Government and headquarters organizations in this community we would have less future growth.

Mr. **Kildee**. Government is a growth industry?

Mr. **Scheuer**. I think you should point out that that is what the Republican administration is faced with. [Laughter.]

Dr. **Spencer**. With these introductory remarks as to where we come from, I have been trying to think of what policy suggestions we might make. One option is to muddle through and hang on. When you are in a state of decline, you find to your surprise that institutions tend to exist less for the benefit of the clients—students—than for the benefit of the staff and the faculty. So retrenchment is a very, very painful process when you find out that not all folks are high-minded when it comes to giving up jobs, or cutting our low enrollment programs, or similar painful decisions.

Mr. **Scheuer**. We are finding that out now in a very harsh way in the debate on the tuition tax credit.

Dr. **Spencer**. Yes.

Mr. **Scheuer**. Because the education establishment is up in arms and one cannot help but get the feeling that it is because they perceive it as job threatening and it is their jobs that are being threatened.

Dr. **Spencer**. We recruited a liberal arts faculty at SSU to begin with and it was my notion that they were to be the core of this institution in terms of its scholarly quality and teaching style. From that point one recruits the professional faculty within that commitment and framework of the liberal arts. To my surprise after the enrollment crunch began I found that liberal arts people do not welcome professional people and programs on the campus. They would take away their students. Some scorned professional programs because they were oriented to the "service arts"; for example, jobs. With some difficulty, we finally developed an arrangement on the part of some liberal arts faculty that they ride circuit among the professional programs and bring their enlightenment to police administration, nursing, management, public administration, and the more workaday things. So the consequences of retrenchment on faculty behavior and identity are very serious. With the faculty senate, we have developed layoff plans for tenured faculty, which have been approved right up to the board level so that if that unfortunate day ever comes when we have to start laying off faculty, we have a process to do it. But long before that, there are budget cuts which stimulate faculty and staff anxieties and keep them high, and do not give you much peace as a manager of decline. I think we might explore what kind of authority, what kind of humanity and wonder-working is necessary to be a leader of a highly participative professional and scholarly institution in a state of retrenchment or decline. Because we have so much participation and direct access to governing board and board staff, decisionmaking of this kind tends to corrode leadership itself. And most of you know of circumstances where you find an administrator who has done the right thing, and who is the one who is out of a job because he has tried to meet these things head-on.

Mr. **Scheuer**. That sometimes happens to Congressmen.

Dr. **Spencer**. That is right.

Mr. **Scheuer**. Every once in a while we get your profile in courage down there.

Dr. **Spencer**. Now one of my suggestions is about the matter of external reporting and regulation. As I pointed out earlier, in addition to our new institutions, all institutions in the public sector in particular these days, but particularly the new ones, are heavily regulated. We call ourselves a managed public utility. For example, to meet the requirements of external reporting we have an institutional research center at Sangamon with a staff nearly the same size, give or take a few student workers, as that of the University of Illinois. This is because the demands for external reporting are the same whether you are big or little. A similar burden is on all private schools also to meet these new external requirements. This does not contribute to your sense of what ought to be taught. It does not help you deal with the educational questions you face, but it does keep the external clients happy. And this is a phenomenon, I think, that might be reexamined as how do you debureaucratize higher education so you can be educators once more and maybe face the problem of decline and manage it more effectively.

Faculty seldom understand why we have so many educational bureaucrats on campus and in external agencies and it is simply because external reporting is not very visible in a curricular sense or in a teaching sense.

I thought as I was listening to the other panelists that if your committee does come upon suggestions for policy change, you might find yourselves stimulating another Ph. D. specialist program some place as a whole new crop of new professionals may be needed to manage decline and retrenchment in higher education. I was just wondering how we would handle the near-term future if we did not have sociologists or their subspecies we call demographers. We would somehow muddle through, I imagine, and might not fight with each other any more than we do today.

But I thought you might take another tack and this is the only policy suggestion I really have. That is, why not look for institutions that work, families that work, communities that work, and colleges that work in this period of decline and find out what the characteristics of leadership, budget, curriculum, staffing and participation are, among other things, that these institutions have. In fact, I was thinking that most of us experts at this table are migratory workers. Academic professionals tend to be uprooted people, and they are often great critics, but not very good citizens because they are denied real stable community and citizenship experience because of their mobility. Why would you invite a group of migratory workers to advise you on policy? Your questions may be better answered by people who have been settled long enough to know what a community is and what the networks of support and understanding are in a community.

While I was talking, I counted the number of schools I went to and places I lived—between age 3 and 18—three schools, two neighborhoods and four places. My daughter, who lives in town here, went to five schools, lived in five neighborhoods and six places during the same period in her life. My mother and father were less mobile than I, and I am sure my grandchildren will move and travel much more than their own parents. But the element of stability is very important in growth planning as it is in retrenchment planning, and in making communities work and institutions work. We seem to think that by adding something to a curriculum or adding an element to a community we build a community when there are a lot of other ingredients in it. For instance—I do not want to be too autobiographical here—I have an 87-year-old mother living in town who, for 5 years, has taught part time in a parochial school. She teaches first and second graders on a one-to-one basis who have reading problems. She has always been a teacher, but when she got old, she decided to teach part time. She lives in an all-black community, works in an all-black or mixed parish school, and it is in a stale area of Washington, D.C., which seems to be working. At least from the standpoint of that neighborhood and that school and the relationship of the few white people in the community, things are working. An overlooked source of stability is the parish. She has a very meaningful life—although it is a halftime job, mornings only—and it has kept her as an active citizen and participant in school and parish life through her eighties. But how many of us know where to find the talent to make similar schemes work in other settings and what are the ingredients of that neighborhood and that parish that might make this useful some place else?

I think we have resources that we have not tapped, maybe because our methodology of looking for solutions is so big, so grand in scale. If we could find a way to reward communities and institutions that are doing things right and make models out of them and then stimulate that kind of change in other areas, we might simplify this problem enormously. For instance, let us look at the neighborhood person who is successfully taking in the child or the preschool children of the neighborhood for working mothers. There are some enormously successful women doing this, surrogate mothers for a lot of children. But there is little reward for it in the civic sense; there is more often punishment by regulations. There are similar community institutions that might be looked at where things might be working. I do not know how Federal policy can provide the motivation, the carrots, if you will, for institutional and behavioral change. But I do know it takes time and it takes leadership of a kind which I am not sure always emerges when you are dealing with grants. I observed early on when I was a graduate dean that too often truth is where the money is in our graduate education and research; it is not where the need is. And too often in our institutional behavior the rewards do not go to the real problem solvers; it goes to the grant getters.

Now, I do not know how you can change this solution, but I am suggesting that maybe we should be more innovative and forthright in management of higher education since it is already suffering from cynicism and disillusionment about its own purposes and goals.

Here's another suggestion: The Senate Select Committee on Nutrition and Human Needs dared to suggest that this Nation might change its nutritional standards so as to reduce carbohydrate consumption, certain animal protein consumption, diminish utilization of junk food, and increase the fiber content of our diet. Now, can a Senate or House committee suggest that maybe in higher education there might be a richer diet, and a stronger purpose than institutional survival itself for our schools? We are now timidly getting back to basics on the elementary level, but what about higher education? Who dares criticize that? It is no longer fashionable or possible for presidents to be educators and it is a high risk for VPs and deans. It seems they are managers and politicians, more than educators. But somebody should be saying these things because we need good models in education very badly—people who can provide models for change who can get us back to what education really is, and to perhaps what Whitehead once suggested as a goal—"the habitual vision of greatness".

So I did not come up with anything very practical, Mr. Chairman, but these are my thoughts. And, these remarks are a condensation of what might have been a rather dull discussion.

Mr. **Stockman**. Thank you very much.

Why don't we turn to questions. Dale, do you have any questions?

Mr. **Kildee**. Well, just one question maybe. Having served 12 years in a State legislature, I have noted that a State legislature usually is very preoccupied with FTE—full-time equivalent—and usually writes the formula in that way. That does not really encourage in any way quality education or innovation or concentration or a core curriculum, does it, when the legislature imposes such a formula upon you?

Dr. **Spencer**. Not without some values attached to the uses of formulas, the uses of the funding, I would say.

Mr. **Kildee**. Right now though, you are almost forced to go out and look for live bodies in order to get dollars shaken loose from the State legislature rather than looking at programs and quality on your campus, are you not?

Dr. **Spencer**. Yes. Of course, we politely tell legislators to stay out of the content of education because you are not supposed to be competent as a legislator about these things. That is a specialist's function and academic freedom and institutional autonomy are precious things. But you are concerned with the common good as legislators and the welfare of your districts and communities. Somehow some of us, or some people will break through that and try to find a way to set some goals which would tie strings to educational funding, let us say, on performance, in the same way that we try to put a merit system into a university to reward the people with the best minds and the best teaching skills. That is very, very difficult because everyone wants to be treated alike once a place is established; that is, the vested bureaucracy tends to take over and equal treatment is the solution to merit and also discourages the stronger people and institutions.

But you have got the same thing in any bureaucratic environment, I think, of how to break through and provide incentives for change and for development along purposeful lines.

Mr. **Kildee**. It would seem that the policy of State legislators has been really to force colleges to look for live bodies rather than really look at what programs might be——

Dr. **Spencer**. That is right.

Mr. **Kildee**. As a matter of fact, in our formulas, if we do make any differential in the students, we generally give them more dollars for those who are, say, taking welding than those who are studying Shakespeare.

Dr. **Spencer**. That is right, and is a matter of comparative values and priorities. Both are important. One should not substitute for the other.

Mr. **Kildee**. Now there may be some fiscal reasons for that, but if we do make a differential in FTE, usually the vocational skills are the ones that are more highly funded. And you mentioned when you opened your school, your core faculty and curriculum were the liberal arts.

Dr. **Spencer**. The core faculty and degree programs.

Mr. **Kildee**. The core faculty, right.

Dr. **Spencer**. We could never settle on a liberal arts curriculum—we begin with the junior year. We do not have an undergraduate curriculum. It is an upper level and graduate school. But we do have a mandate to the liberal arts in terms of the teaching style and electives and the cultural environment for study.

Mr. **Kildee**. The point I am trying to make is even though the legislature is politely or sometimes impolitely told that we cannot make academic decisions, and I concur in that—I believe in academic freedom—that nevertheless, by our fiscal policies toward a college, we do enter into curriculum decisions. We force you into certain curriculum decisions because of the way we fund the colleges.

Dr. **Spencer**. For example, schools are mandated to teach driver education, alcohol education, specifically, and to certain basics of career training, and then you have——

Mr. **Scheuer**. What about drug abuse education?

Dr. **Spencer**. Yes, in some common schools, and that clutters up the curriculum basics because we cannot really get hold on restoring the basics as easily as we mandate the special interest areas of the curriculum. But it is a difficult thing to get ahold of.

I think a better reward system for doing the basics is needed, perhaps in a certain sense, recognizing the better models is one possible approach.

Mr. **Kildee**. But a program that might be really educationally very sound and socially very sound, but does not attract a large number of people, becomes very difficult for a college to maintain because the legislature is not going to fund it since we generally base it upon bodies.

Dr. **Spencer**. That is right, and the scramble for bodies becomes very undignified when you are in an environment of decline.

Mr. **Kildee**. Thank you very much, Mr. Chairman.

Mr. **Stockman**. I am going to yield to Mr. Scheuer, but before I do, I want to ask Dr. Spencer what punishment was meted out to the demographer who did the projections on which your institution was based? [Laughter.]

Is he now working for the Federal Government?

Dr. **Spencer**. No, you have to forgive people. [Laughter.]

We Americans are eternally optimistic that education will somehow flourish and succeed in any setting.

There is a story about the founding of the University of Illinois that Allan Nevins told when he was a lecturer there in the early 1960's. It says that when Urbana got the State university, Kankakee got the State hospital, Joliet got the prison, and Springfield got the State fair. It took 125 years before Springfield, the State capitol, got its State university. If there had been a State university in the State capitol from the beginning, the history of Illinois would have been different, just as the history of Wisconsin and the history of Michigan is different because of the presence of great universities in their capitols.

But the reasons why you start schools are many and the reasons why you protect them are many. Planning provides employment for planners, for one thing, and you need big plans in order to get something on the boards and get it funded. There was no hint during the late 1960's when they planned these two schools that there would be such a difference in the outcomes in contrast with expectations. Even Governor's State University, located south of Chicago in Cook County, has 3 million people within 20 miles of its campus. Yet GSU is much bigger than we are and we have only half a million people within 30 or 40 miles. So you cannot win on projections. Overestimating projections has happened in Florida; in New York; and in Texas.

Mr. **Scheuer**. It seems understandable to me how they could miss on a long-range estimate of a generation. How could miscalculations occur for a decade or a decade and a half when they can tell fairly accurately from the births this year how many children will be going into their high school years say 14 years from now?

Dr. **Spencer**. I think their projections were based in part on the rate of growth and the rate of graduation of community college students. The upper level institutions, such as ours, were designed to articulate with community colleges. The 4-year publics were not very interested in community college students until their own enrollments began to drop. Then they became very interested in community college graduates and now they admit them at the junior year level with no or very little academic penalty. It used to be a "5-year trip" if you went to community college and transferred. Today, even the University of Illinois takes community college graduates with very little penalty, providing the academic standing is adequate and basic requirements are met.

Mr. **Kildee**. Four year colleges recruit students now, whereas before they were very, very disdainful.

Dr. **Spencer**. And the U of I and other well established schools are much more attractive than new institutions which are untested and do not have those winning teams. As you may know, school choice is related to other things besides academics.

Mr. **Scheuer**. How can you see Congress helping and moving along this process of variety within unity? How can we help in creating a more diverse educational system that really focuses on noneducational community needs, a whole variety of government facilities and services, and incorporates them in with traditional formal education? This would also include all of the social service disciplines and at every age group. What is the role that we should be playing here?

Dr. **Spencer**. Well, this is an architectonic question.

Mr. **Scheuer**. If you can give us all the specifics you can in terms of policy and program, we would be grateful.

Dr. SPENCER. I think that one of the things that we might do to unbind higher education would be to provide in some way flexible money and encouragement to quality leadership situations with strong community support. We have seen that the absence of flexibility and the absence of available resources and support to encourage leadership continue to frustrate the kind of institutional development that you are talking about. We do not have change agents or change directed programs which are not already constrained by regulations. You might need a kind of community organizer who can represent a host of governmental programs and bring them together, bring them to bear on a community or educational situation. As it is, there is a telephone book of programs that you have got to shop through in order to set up your own program. We need people and funding for catalytic program development.

Mr. SCHEUER. Where would that person sit?

Dr. SPENCER. He might be a "circuit rider".

Mr. SCHEUER. Should this person be part of the local education system or be in the State office of education? Should he or she be a Federal bureaucrat sitting in the Office of Education down here? Where would you like to see that catalytic function?

Dr. SPENCER. I have not really thought this through, but——

Mr. SCHEUER. Our last witness, Dr. Mary Berry, is now on her way from the White House where she was this morning, so we have 15 minutes to kill. [Laughter.]

So, you have got to keep talking one way or another.

Dr. SPENCER. Maybe the other panelists have suggestions here.

Mr. SCHEUER. Where would you suggest this catalytic function ought to be located?

Dr. SPENCER. Well, it is hard to find, but I think it can be located in the office of an innovative Governor or head of a board of higher education. The task is to get the truly innovative people into such a program. You have them in every State government and in every city. But they are very often not appropriately placed or institutionalized for this kind of mission.

Mr. SCHEUER. It ought to be a poor man's Mrs. Eisenberger.

Dr. SPENCER. Right.

Mrs. EISENBERGER. What is wrong with a rich man?

Mr. SCHEUER. You are not going to be able to replicate her, but someone who has been motivated in trying to think along the lines that she was giving us. Is that not what we are talking about?

Dr. SPENCER. That is right.

Mr. SCHEUER. Someone who lays out all the options in that community and then works with the local community people to try and piece together a comprehensive program that is sensitive and relevant to community needs.

Dr. SPENCER. Right.

Mr. SCHEUER. But on the basis of experience, this person is going to think of a lot of different permutations, combinations of events, services and facilities, than someone from that neighborhood who is starting out without the background.

Dr. SPENCER. Right, some years ago I served several terms in the Vermont Senate. During that time, we heard of a very small and rather poorly funded experimental community development project called the Terrill fund project. The project eliminated the single-purpose social worker and provided instead, a community organizer to represent all agencies and programs. This person stayed in the neighborhood and did not specialize in a single welfare function for a segregated age group of clients. The Terrill fund project had remarkable results. The only thing was that some social workers did not like it, and not a few teachers were suspicious, and the ministers were not sure. These other people who were also charged with doing good and at times did it badly, were upset. But they had gifted people doing this kind of community organizing on behalf of many needs of their clients. So there was a kind of social stability associated with improvement.

Mr. Scheuer. Where did this take place?

Dr. Spencer. St. Albans, Vt., 25 years ago in a little project that was privately endowed at first and then was funded partially by the State, I believe.

I am sure many similar projects have succeeded since then, and we have all had more community organization experience in many different settings since then. But it might be something to think about. If you can find somebody—some way to do this without the redundancies associated with bureaucratizing one more group of people. I would not go to academe, not because I do not love them, but because their experience is very often limited. I would go to a man who has succeeded in a range of settings, perhaps an ex-politician or teacher who has still got his virtue. [Laughter.]

Mr. Kildee. Let us look at the reason for being asked.

Dr. Spencer. I speak for myself this way.

Mr. Scheuer. That is something of a contradiction in terms. [Laughter.]

Mr. Kildee. A successful politician is one who has voluntarily retired from the field of battle.

Dr. Spencer. Yes. I think there might be a way to provide this kind of resourcefulness. There are many, many older people who have these kinds of skills who, given a little help and authority, could render enormous service to a community. That is just my——

Mr. Scheuer. You do mean a noneducational professional?

Dr. Spencer. Not necessarily, but one who is resourceful and ecumenical in spirit at the same time.

Mr. Scheuer. Yes.

Mrs. Eisenberger. Mr. Chairman.

Mr. Scheuer. Yes, Mrs. Eisenberger.

Mrs. Eisenberger. I would like to ask my colleague a question, if I may. You describe some characteristics of leadership in an era of decline or managing decline. I would like you to comment for me in regard to the world of big business; a world where so frequently education is held up to and pales by comparison. In the world of big business, such companies as Johnson & Johnson who saw their clientele and market disappear now manage their decline by marketing their baby shampoo for the adult who washes his hair daily. Levi Strauss who clad a generation of teenagers in tight denims is managing decline by opening the seams of his jeans to fit a fuller figure with his "jeans for men" line. [Laughter.]

We have seen Gerber package its baby food now in single adult package servings.

Mr. Scheuer. For senior citizens.

Mrs. **Eisenberger**. For senior citizens. When we look at business, we see managers of decline in the business would seeking new markets. Yet, you comment negatively about marketing education today instead of being an educator. I find it difficult on one hand to view the marketing of education in the concept that we are talking about during an era of decline as being negative. We would be marketing education to a new and different series of markets and providing greater opportunities just as Levi Strauss has now for another generation to wear jeans. Could you comment on why you said educators seeking new markets were less than attractive?

Dr. **Spencer**. Yes. I am very prejudiced. [Laughter.]

I have a distinct bias that the liberal arts are kind of basic to the educational process and that our job skills and marketing skills should be acquired through experience more than through schooling. When you take experiential things and put them into the university curriculum, you deny people exposure to the liberal arts. This is just a trade off. We have an applied study program at Sangamon State which is required of undergraduates where they must have job experience to get the bachelor's degree. Some skills we do not try to teach, job skills, habituation to the workplace and preprofessional experience, in, let us say, State agencies. We have over 100 employers. So my bias for the liberal arts asks the university to do what it can do best and my bias for the workplace says the workplace can teach some things better than the campus in many cases.

What we have done is made the university the vocational school and having done so, it is difficult to catch up with the education you missed in later life. Now there is a new function for higher education as the student population grows older. You teach for the education that people missed. And that is the most rewarding of all teaching experiences—the adult learner—particularly in a setting with the younger students. The adult learner, by being there, helps teach the younger students and also teaches the faculty much. This is because the older learner has experience, a sense of the past and talks back.

So I think there is an answer, but it is a subtle answer. It is not a simple one of the liberal arts versus the professions because the professional people in many universities are the only people in contact with the working world and we must respect that. At the same time, we cannot trade off illiteracy for specialized or technical education in the professions. We have a literacy problem in the liberal arts now as well as the professions. So our task is to nurture the learned professions and somehow make a mix on the campus so you cannot escape providing some kind of liberal education. It is an obstacle course—that is what education is in a way, is it not?

Mrs. **Eisenberger**. Thank you.

Mr. **Stockman**. I just have one question that I would like to put forth. If there are any further comments that some of you would like to make in reaction to what has come from up here or from other members of the panel, we would be glad to hear it and then I think we will close off the session.

It seems to me as I try to summarize everything we have heard this morning, it boils down to the fact that because we have had these tremendous gyrations in demographic factors and fertility trends and so forth that the entire education system is going to face tremendous volatility in the next 20 years. In the elementary level, there will be steep declines until 1985 and then it will turn around in a descending trend depending on the fertility rate; there will be a sharp drop in the 1980's for secondary schools and a turn around sometime in the 1990's and even greater uncertainty for the higher education level.

Now, as I understand it, the National Institute of Education is supposed to be the great fount of innovation and to be on the cutting edge in terms of the whole educational structure in this country. I am just wondering whether any of you know if the NIE is doing anything to help the educational system cope with this tremendous volitility that lies ahead in the next 20 years.

Mrs. **Eisenberger**. I would like to respond to that if I may. I have had an opportunity to become intimately involved with some of the projects, funding opportunities, and research that has gone on with NIE. In the Office of Finance, the director, Mr. Dennis Doyle, currently has a project called "Changing Enrollments." He provided research funds to some 11 different project people who went out into the field and did actual research reports, returned them to NIE and they have now been published in a book which I believe is out this month. The range of topics covers the cost of decline through the view of enrollment decline from the superintendent's chair through the demographic trends ahead. I know also that they are currently involved in a series of other research projects geared for an era of decline and understanding that decline.

I think perhaps my colleague, Dr. Fishlow, would like to comment on the seminar that was originally done some 3 years ago by NIE.

Mr. **Stockman**. Yes, Dr. Fishlow.

Dr. **Fishlow**. Has it been 3 years already? That was the one at Snowbird. Frankly, I have been peripherally involved because I am not involved in the financial studies that were done, which was the heart of it. However, I did prepare a paper from which I drew the material I presented today and I believe that will be in that volume "Changing Enrollments". The NIE has been active now for several years in, first of all, promoting research and in asking for suggestions for projects. The suggestions I made about funding, the sorts of things NIE could fund, were what I went through today; namely, to find out what the fluctuations will be and also perhaps prepare manuals to assist school superintendents in closing physical plant and in preparing teachers for other careers.

But I have not had any more contact than that.

Mr. **Stockman**. Well, Dr. Berry has arrived and I think we will ask her to make her statement at this time. Before I yield to her, I just want to get some sense from the panel as to whether you think that adequate resources are being devoted by the NIE to this very major and important educational problem that faces us down the road. Is there more that could be done?

Mrs. **Eisenberger**. I cannot respond in terms of whether the resources allocated to the study of decline is adequate because I am not familiar with the priorities of NIE within itself. So for me to

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make a judgment as to whether they are establishing the priorities appropriately, I could not. I feel comfortable, however, knowing that they are in the area, that they are working with decline, that they are involved, and that AASA is involved with them. I know that other administrator organizations are in contact and involved. In direct response, of course, absolutely, greater funding by Congress would be better.

Mr. **Stockman**. Well, I would like to welcome Dr. Berry, Assistant Secretary, for Education, HEW. We realize you had a very important assignment this morning about a mile down the street here and so we are delighted that you are able to join us and we give you this opportunity to make your statement.

STATEMENT OF DR. MARY BERRY, ASSISTANT SECRETARY FOR EDUCATION, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

[Prepared Statement in Appendix on p. 604.]

Dr. **Berry**. Thank you very much and I do apologize. We were down with the Presidential scholars, who are those gifted and talented students we recognize every year with the President at the White House. I am pleased to be here and have the opportunity to testify before this committee on the implications of demographic change on the Nation's elementary and secondary school population.

I do have a statement which I would like to submit for the record, please.

Mr. **Stockman**. Fine.

Dr. **Berry**. I will summarize portions of that statement and then be prepared to answer any questions that you might have.

Not knowing what has already been said before I arrived here this morning, I hope I do not repeat too often something that has been stated.

We do recognize from all the data that is available to us from the National Center for Education Statistics and from the Census Bureau that a decline in elementary/secondary school enrollment is projected at least through 1990, and that there are some complexities involved in analyzing it. One should point out for example, that the K-8 enrollment is projected to start increasing, but that it will be offset by continued declines in high school enrollments. So the overall figures are going down.

The problem is also made complex because in some areas of the country enrollment is actually going up. In fact, in the sun belt areas the projections indicate that the enrollment generally will be going up. There are even districts, within areas with declining enrollments, where enrollment is going up. So you have a very mixed kind of picture. It would be easier to deal with if it were not mixed.

The whole problem is complicated by the fact that Americans—and that includes school teachers, administrators, and parents as well—are more often inclined to think in terms of expansion rather than decline. Many of the scholars who work in this field talk about the psychological impact of having to deal with decline. A distinguished American historian, David Potter, wrote a very significant book called "People of Plenty" which I think explains better than almost anything else that expansion is the ideal of the American people. It is difficult therefore, for administrators, for teachers, for parents, for communities to cope with the notion that decline is occurring, even when it occurs right in front of them.

Mr. **Scheuer**. They equate it with failure.

Dr. **Berry**. That is right, and that is a notion that has to be dissipated. There are a lot of ways to do that. I think that having hearings of this kind is a very effective way of putting the message before the American people. And there are other means that can and should be taken by the Federal Government and the State governments.

It is true, as we all recognize, that State support is generally geared to enrollment, which makes the problem very difficult. It is also true that there are some areas, such as big cities, where even though the enrollment is decreasing, the school population costs more to serve because the kids come from disadvantaged backgrounds or are of limited English-speaking ability. So it costs more to serve fewer. And that complicates the problem.

There are some strategies and policy options that have been suggested by various people to deal with this problem. But I point out again that first one must understand that there is a problem and one must understand that declining enrollment does not signify failure. That is the first thing that must be recognized.

Now let's look at these strategies and policy options. We need to take the lead in explaining to people and to those who have leadership for education in the States and local communities that one option, of course, is simply to adjust to the fact that there are fewer numbers. They can do that. I mean, they can talk about closing buildings and working out local union or tenure problems and firing teachers. Let us cut everything in sight.

Another thing that they can do is look around at other uses for the schools. There are uses. There are populations that are still not being served by the schools of the country and it is possible to—is there a rollcall, Mr. Chairman?

Mr. **Stockman**. We are all wired up here.

Mr. **Scheuer**. You do have about 8 minutes and then we have to leave, but we will come back in about 10 minutes.

Dr. **Berry**. I will be finished with my statement well before then.

Mr. **Scheuer**. Good. Then we will come back in 10 minutes and have a final question and answer period.

Dr. **Berry**. All right. There are strategies to deal with this. One thing that schools can do is to look for underserved or unserved populations in a community and simply decide to serve them, such as those in nontraditional age groups. Another they can do is to use schools to serve the community. One idea that has been suggested is to make the school a sort of one-stop shopping center for social services in the community for health or recreational services and the like.

Another thing they can do is to look for populations like the handicapped and get them into schools, as required under the new Federal law, and mainstream them into the regular programs.

So there are populations to be served. But in approaching these strategies, educators need a lot of help. One problem is that administrators who have been taught to manage expansion now have to be taught to manage decline. Teachers who think in terms of traditional populations have to be retrained. We have some programs in the Federal Government and we have the responsibility to do something about those problems. We have a new activity in my office involving the American Association of School Administrators on the retraining of school administrators. We have a new teachers center program that was enacted and funded by the Congress to retrain teachers. We are also supporting a large amount of research, and not just in NIE. We are supporting research on school finance and on declining enrollment at NIE. But we also have research in progress in two or three other offices in the department on these issues. For example, we are looking at whether a State can take the opportunity of declining enrollment to redistribute resources to equalize the financial base for education for all the children within the State.

So we can conduct research, and assist with training and retraining. We can support program options as we do with the community schools legislation. There is the new legislation that has been introduced by Congressman Kildee on the House side and by Senator Williams on the Senate side to use the schools for the community. So we can do all of those things. There is a Federal role.

We can, in addition, help the States develop a data base for each one of their communities so that people will know what the situation is locally. Since the situations are so different in the various communities throughout the country, it is not enough for a local official to know what the national picture looks like or even what the State picture looks like. They have to be aware of economic trends in their own community and the opportunities that are created by this new declining enrollment situation.

Thank you very much, Mr. Chairman. And I would be pleased to answer any questions that you might have.

Mr. **Stockman**. Thank you, Dr. Berry. I think we will break right now and run over to the floor quickly. If you all could persevere for a few minutes, we will be back and I am sure there will be a number of questions.

Dr. **Berry**. By all means.

[Short recess taken.]

Mr. **Akaka**. The hearing will please come to order. I want to thank Dr. Berry for her testimony.

Dr. **Berry**. Thank you, Mr. Chairman.

Mr. **Akaka**. And now I understand we are ready for any questions. Let me call on the distinguished chairman of the Select Committee on Population, who is asking me to go first. [Laughter.]

Let me ask you the first question then: How important is the problem of predicting enrollments as opposed to the actual management of decline?

Dr. **Berry**. I thing that the problem of predicting enrollments is, of course, related to the management of decline. One would not believe that decline was, in fact, taking place or would take place if one did not believe that we were able to make predictions. We would also have to have information available that would tell us how long the decline would continue. So we need to have predictions, and some reputable way of making those predictions, in order to worry about the problem of decline itself and its management. I see the two as related to each other. They are both necessary. Managing a decline when you know it exists is a current problem that you must face. But you also need to have enrollment predictions so that you know if there is going to be an upsurge in enrollments or whether they are going to continue to have a down turn. So prediction is related to management.

Mr. **Akaka**. How far ahead of the actual decline can you determine this?

Dr. **Berry**. One of the demographers could answer that better than I could. The information that I have read would indicate to me that a number of experts knew that there was going to be a decline in enrollment, or at least they thought that there would be a decline in enrollment and projected that there would be one before it took place. But it seems that it was rather difficult for that information to penetrate the consciousness of the people who were involved in the schools as well as the communities. The reasons have to do with dissemination as well as the psychological notion that one thinks always in terms of expansion. But they knew a bit ahead of the actual decline, that decline was projected. You can tell in terms of how may babies are born, for example. It is a simple way—if you know how many babies are born or are likely to be born, you know how old they are likely to be at a certain time. So enrollment predictions are related to how reliable our predictions are for the numbers of births, and mortality rates, and the like. So it does seem possible to tell.

Mr. **Akaka**. What has been the general trend in enrollment, let us say, in the elementary school systems throughout our country?

Dr. **Berry**. Well, until recently enrollments were increasing. It has only been in the last few years, into the 1970's, that one has talked in terms of decline and the persistent pattern of decline which is projected to continue until the 1990's. Before that time, in the 1960's and 1950's, we thought always in terms of more and more students, and more and more buildings, and more and more teachers, and more and more everything.

Mr. **Akaka**. Do you share your data on predicting enrollments with school systems?

Dr. **Berry**. The data that we have available, we do share. Some data are made available by the National Center for Education Statistics from time to time throughout the year. For example, each year NCES releases data on opening fall enrollment, and it reports annually on the condition of education. That is one way we do it.

We have also done a number of studies in NIE on declining enrollment, and just recently published such a study with a number of papers, some of them written by people who are on the panel here, I am told. Those are made available to school systems. But on a routine basis, we make available the data that is generated by the National Center for Education Statistics.

Mr. **Akaka**. Thank you very much. Mr. Scheuer.

Mr. **Scheuer**. Thank you very much, Mr. Chairman.

Dr. Berry, we enjoyed your very thoughtful testimony. In your written statement, you say:

> Growth led to innumerable difficulties—but as we proved in the early 1960's, when we constructed 485,000 new classrooms and trained and employed each year

more than 150,000 new elementary and secondary school teachers, we have historically been capable of handling those difficulties well.

Now, there is opinion to the contrary. Of course, this is not directed at you; it is directed to our education establishment and how it has performed over the last decade. The Advisory Committee on National Growth Policy Processes, in effect, concluded that the Federal Government's response to the baby boom was belated and not very intelligent and that it came as a response to a crisis situation long after the signs were apparent. The Advisory Committee went on to say that programs, for example, to train new teachers and programs to build new schools were terminated much too late when it was perfectly clear that we were in the midst of a baby bust and not a baby boom. I would like to have your comments on this and I would also like to get some more specifics on the actions you are taking to improve the capabilities of your division and the Federal Government to plan in advance for population change. You mentioned before that you are reeducating school administrators; you are retraining school administrators and school teachers. What are you retraining them for? What are you teaching them to do?

Dr. BERRY. This is a very difficult problem, as you point out. My statement in my written testimony was only intended to mean that when we were in the midst of growth, the American school system seemed able to come up with new classrooms at a time when they were needed and teachers when they were needed. But I agree with you that all of the historical evidence shows that the reaction came after the fact rather than as the problem actually occurred. Also the reaction seemed not to be based on any predictions that were available, and that could have been made, about the fact that the problem was coming.

I also agree with you that some of the programs were continued unchanged until long after they seemed to be needed. I mean, their purposes were not diverted. For example, we have a teacher corps program. I discovered that it was only about a year or two ago that its purposes were changed to the retraining of teachers rather than training new teachers, even though it was obvious that we probably did need to redirect the program.

So you do have a problem of a match between prediction and the uses of that information by administrations and also by Congress to make policy in a timely fashion.

Mr. SCHEUER. When you say there is no match, you are saying that in a period when the baby bust had already commenced, when all the evidences were there, we were still cranking out new teachers and new schools. Now to put it very simply, the Federal Government failed. And I take part of the responsibility because I am a Member of Congress. From 1965 to 1973 I served on the Education Committee, so I bear an even heavier burden of guilt than most of my colleagues here.

But I think we have to start out with a very clear understanding that both the Federal executive branch and the Congress failed. Now, tell us what you are training these new administrators and new teachers for.

Dr. BERRY. Well, we plan to train the administrators to be able to manage the decline in which they find themselves now, and to use predictive information of the kind we are talking about today to adjust to situations as they come along, to be aware of the fluctuations that take place and of the different strategies that you use to approach either of these. But first to deal with the immediate problem, which is——

Mr. Scheuer. How are you teaching them to deal with decline?

Dr. Berry. They must deal with it very carefully and very sensitively. They must realize that before doing what might seem sensible, like closing down a school in a community because the numbers have gone down this year, they must first get some local information on what the numbers are going to be in succeeding years. They can't assume that what has happened this year in a school district will happen for the next 10 years.

Second, they are being trained to look for new uses for the buildings rather than just closing them. The buildings may be used for something else in that community.

And finally, if the buildings cannot be used, they are being trained to think in terms of not selling if all the evidence is that 10 years from now they will need the buildings. It would be a lot cheaper to perhaps lease them for some other purpose, and to think imaginatively and creatively, and to approach their local problems with more flexibility. So that is what we intend to do in training the administrators.

As far as the retraining of teachers is concerned, one can help them deal with immediate local problems, such as dealing with different populations that they had not expected to have to teach and do not know how to teach.

The other goal is to make teachers aware and more importantly, to make those who train teachers aware that they have to build more flexibility into teacher training than in the past. One just has to be aware of the demographic facts, as you said about any enterprise.

So I think that those are two responsibilities. We are only at the beginning, the very beginning of that effort and we need to do a lot more.

Mr. Scheuer. We have had a fascinating morning of testimony here and I am sorry that you missed it. I am going to take the liberty of asking Mrs. Eisenberger to just give you a laundry list of the kind of things that we talked about in detail. That is, some of the flexibilities and choices, options and exciting possibilities that decline gives us. And then ask whether you think these kinds of things are being included in your retraining programs.

Mrs. Eisenberger.

Mrs. Eisenberger. Thank you. It is a pleasure to have the opportunity to reiterate briefly some of the comments I made earlier.

The focus of my testimony was on the opportunities that decline can provide for us, and some of the impediments in realizing these opportunities. I suggested in my testimony that we need to consider legislation that will allow States and regions, particularly at the local level, to have a greater flexibility in building recycling. We are currently limited in many cases by law as to what we can do with a buiding. We need to be able to provide recycling, rehabilitation, and joint occupancy facilities.

If I could quote your term, which I thought was just marvelous, "the shopping center of social services under one roof". We have traditionally called that a joint occupancy facility, but I like your term so must better. It is so much more——

Dr. **Berry**. Of course yours is much more sophisticated. [Laughter.]

Mrs. **Eisenberger**. A shopping center of social services under one roof gives the visual image of some of the comments I made earlier this morning.

The other area that I spoke of was the concept of age segregation. We are the only society in the history of the world that segregates ourselves predominantly by age and we need to break down the isolation and the barriers that we have built within age segregation. One way that we might do this is by providing opportunities for older people to learn and understand and gain information about the young from sources other than TV newsreels. The schoolhouse becomes a logical place to provide programs which would involve adults, whether they be middle-aged adults or senior citizens or as the Committee on Aging calls them "young old" and "old old". Whatever category they may fall in, we should begin to conceptualize ways that we can incorporate all of our society as life-long learners under one roof.

In the same vein, the extension of the schoolday to provide for the needed demands of working mothers for child care, day care and nursery.

I also commented on the concept of managing decline. We, as a country, have a psychological orientation toward growth. Our history is predicated on growth—bigger is better, new is best, and growth is positive—to not grow is almost un-American. And when we have this American mindset, it is very difficult to dispel or disabuse people of the idea that decline or contraction or stabilization or whatever term you want to use may result in positive actions and societal gains.

Another comment that I made was in terms of providing categorical aid for adults to participate in schools as an ongoing, everyday learner in our school buildings.

I guess these were the main points that I had suggested.

Mr. **Scheuer**. Well, just assume that I had been clever enough and creative enough and imaginative enough to have suggested all of these exciting choices, options, and flexibilities. What is your reaction to them? That is the question.

Dr. **Berry**. We know that you would have been shrewd enough and smart enough to do so because you are one of the most imaginative and talented harmonica players in the Congress. [Laughter.]

As you demonstrated at the hoedown the other night. I just wanted to congratulate you publicly.

Mr. **Scheuer**. You have made me a very happy man. [Laughter.]

Dr. **Berry**. Let me indeed address the points that Mrs. Eisenberger made. First of all, the one-stop shopping center idea and using the schools in that way can be implemented very——

Mr. **Scheuer**. Let me just add in the record that I am not entirely unqualified in that area. I want you to know that in 1933, when I was 13 years old, I was New York City harmonica champion.

Dr. **Berry**. Great. [Applause.]

Mr. **Scheuer**. Please proceed.

Dr. **Berry**. It shows. [Laughter.]

Dr. **Berry**. I think that the shopping center idea, the use of schools for social services can be implemented rather successfully under the new community schools legislation I mentioned earlier that Congressman Kildee and Senator Williams have added to the Elementary and Secondary Education Act reauthorization. So this act gives us a basis to move more aggressively in that area, and it is an area that I think is very much needed.

On the issue of lifelong learning and serving adult populations, unfortunately, even though the Congress passed a bill to give us the authority to begin a lifelong learning program before we all came here last year, no funding had been made available. We requested some funds for it, looking at all the demographic facts and the predictions and the current situation. We thought it made sense and we suggested some money in our budget for the lifelong learning program this year. But the House saw fit not to fund it. We do not know what the Senate will do. But, we think that the lack of funding flies in the face of the very demographic facts that we are talking about in this committee. We very much believe that lifelong learning is needed and all of our information tells us that it is needed very much.

On population education, which is also important for the students in the country and for teachers, I understand that there is an amendment that was tacked onto ESEA, the Elementary and Secondary Education Act, which would give us a basis for moving in that area.

And then, finally, on the point you made first, about housing and schools and greater flexibility in building use, it seems to me that if there are constraints on the use of buildings, perhaps there is some legislation that would be needed in that area. We would favor as few constraints as possible so that the buildings can be used in a variety of ways.

So we have some strategies to deal with some of those problems, and in other areas we have tried and have not done enough. And then there are some areas where we still need to do something, Mr. Chairman.

Mr. **Scheuer**. Excuse me, Dr. Berry. I am going to have to go to this rollcall vote. Another congressman, Congressman Kildee, will be back in a minute. Dr. Bouvier and Dr. Williams, of our staff, will take over.

Dr. **Berry**. Thank you very much.

Mr. **Scheuer**. I very much appreciate you appearing before the committee. Your testimony was marvelous.

Dr. **Berry**. Thank you.

Dr. **Bouvier**. Just to turn to some of the problems of enrollments on the college level and address it to the entire panel. Dr. Spencer has mentioned how the projections for Sangamon State were off by about 7,000 and it brings up an interesting question about the problems of enrollments in college. But first of all, when we make college enrollment projections, we must take into consideration many things besides the demographic aspect.

Many of us are concerned with enrollment declines and there are a number of bills introduced in the Congress with reference to assistance for college education. One bill has been recently introduced into the House by Congressman Michael Harrington of Massachusetts and I would like to have your thoughts on it. The bill would allow college students to borrow money from the Federal Government to pay for the second—not the first year—but the second, third, and fourth years of college—not graduate school. Rather than the old loan system that we are all familiar with, the students would then repay the loan through the IRS. Do you think that kind of a plan would alleviate some of the enrollment problems that colleges face today that are forcing some of them, as Dr. Spencer testified, to literally shop around for numbers and never mind the quality? I would like any of your thoughts on this particular question.

Dr. **FISHLOW**. I made some remarks earlier about the rate of attendance. Whereas this bill may be very good for other reasons, such as affording people the opportunity to go on to higher education where they might not otherwise have, we are not going to eliminate the effect of the demographic decline by doing that. Even if we vastly increase the probable rate of attendance from the current rate, which is roughly one-third, to 50 percent at the end of the century, it will not eliminate the effect of decline. Because the increase in the rate of attendance, assuming we go from 35 percent, roughly, to 50 percent——

Dr. **BOUVIER**. That is 35 of the—what age group are you taking about?

Dr. **FISHLOW**. The traditional age group——

Dr. **BOUVIER**. Eighteen to 24?

Dr. **FISHLOW** [continuing]. Of 18 to 24.

Dr. **BOUVIER**. OK.

Dr. **FISHLOW**. I calculated it once—it is roughly 1 percent a year, the increase in the rate of attendance. Whereas, the demographic decline during many of those years is much steeper than that.

So even if we were increasing the rate of attendance by 1 percent a year, it would not wipe out the demographic decline of better than 2 percent in many of those interim years. Of course, by the end of the century, you would have a demographic upturn anyway.

Dr. **BOUVIER**. Yes.

Dr. **FISHLOW**. So whereas that may be good for various reasons, it might make the decline much less steep, it is not going to eliminate it.

Dr. **BOUVIER**. Thank you.

Dr. **BERRY**. May I comment on that?

Dr. **BOUVIER**. Dr. Berry.

Dr. **BERRY**. I would just comment that we do not have an official position yet on the Harrington bill. As a matter of fact, we are, in the Department, preparing a bill report on it now. So I cannot tell you what our final reaction will be in the administration. But I can tell you that we believe that the student assistance package that we presented to the Congress and that is being considered, called the "Middle Income Student Assistance Package", will provide the financial support that is necessary for students in that category to attend school. So if that is a factor related to the decline, it would

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be our impression that the package that we have up here would solve that problem.

Mr. Akaka. Let me ask a final question. What about the politics of demography? Can we expect old and aging electorate voters to continue to support education?

Dr. Berry. In many communities throughout the country it has already been demonstrated, Mr. Akaka, that we cannot expect them to support education. When bond issues are before the public, they simply vote them down. That has been demonstrated already and that is a problem. Insofar as we will have increasing numbers of citizens living in a community who do not have children or are beyond childbearing age, it might continue to be a problem.

I believe, though, that even with the demographic factors, if we can establish confidence, or more confidence, in public education and the school system, and people can feel more comfortable about the quality of education their children are receiving and the prospects of it, then we might find greater success despite the fact that we are dealing with populations that do not have children in school. If we can make them aware of the necessity that children have a quality education, so that in the end you do not have all kinds of societal problems related to the lack thereof, then we might still go a long way toward getting financial support, despite the fact that they would not have any personal interest in the outcome. But that is a problem. It is a problem all across the country and is likely, I think, to continue to be one.

Mr. Akaka. With a smile on my face, may I ask is that one of the reasons why we should defeat the tuition tax credit?

Dr. Berry. Everything is a reason why you should defeat the tuition tax credit. [Laughter.]

That would be a reason, and anything I can imagine is a reason. By all means, you should do everything to defeat the tuition tax credit.

Mr. Akaka. That question was not only for you, but for others on the panel who wish to comment.

Mrs. Eisenberger. I would like to voice my opinion along with Dr. Berry's in the concern for the defeat of the tuition tax credit. I would also like to make another comment as we look toward our older citizens to continue to support our schools financially. People in general tend to support that from which they receive services. If we were to provide services other than K-12 public instruction within our school system, we might find that the generation who no longer receives services from the K-12 public school system would be very willing to support it. So I perceive that the community bill or any kind of legislation that we can increase the opportunities for a broader segment of our society to receive services from instructional K-12 public systems would not only enhance the opportunities of those people, but would certainly provide for the tomorrow of millions of school children.

Mr. Akaka. When we are through hearing from the other members of the panel, another question I would like to pose to you is what would you recommend that we do to get over the problem of the older electorate not supporting the education system? I think part of the answer is to build confidence. But let us go on—yes?

Dr. Fishlow. I just wanted to remark—I do not have the tables and the numbers in front of me, but the generation or the cohort of people who will be parents will be the increasing one in our society in the 1980's. That bulge of college age students which reaches a peak around 1980 will be becoming of parent age through the 1980's so whatever political implications that has for voting in school bonds ought to switch around.

Mr. Akaka. Now, this depends on the district?

Dr. Fishlow. Of course, but just in the national picture, demographically speaking, there is no reason why they should not be voted in. There may be other reasons.

Mr. Akaka. We know of some school systems that are suffering because of the makeup of that district.

Dr. Fishlow. Oh, quite.

Dr. Spencer. I think we will have difficulty for some time to come with the perception that maybe the common school system, as well as the university system, is overbuilt. People assume a kind of perfect mobility between communities and between institutions as when it is overbuilt in one area—or when there is a half-filled school in one area, and elsewhere it is overcrowded, that this adjustment takes place automatically. So the perceptions that people have, together with the current cynicism and distrust about what education is for and its relative merit, will make compensatory utilization of school facilities tough sledding. There has to be a restoration effort on confidence in what education does for people, I think, as well as the other matters. You just cannot sell education like you used to. The myth has been pretty well shattered as a universal good, so to speak.

That is part of a larger malaise that we should perhaps not get into today.

Mr. Akaka. Dr. Hofferth.

Dr. Hofferth. I would just like to remind us all that the students will be the workers of the future. They will be supporting the elderly. If they cannot read, if they cannot write, if they have a poor education, this will have a detrimental impact on our social security system. I think that if we make a commitment to quality education the elderly will help out.

Dr. Berry. I would like to add only one more point to this question. The evidence indicates that where you have community school programs you do have greater community support for schools. We have a lot of evidence already from the evaluations of the schools. Again, this is a strong basis for the new legislation.

The other part concerns the point that Dr. Hofferth made about quality education. We need to make that known more often to the elderly so that they will be willing to give their support, whether they want to or not. We ought to find some way to impress upon them the importance of that information.

Mr. Akaka. Did you have another word?

Mrs. Eisenberger. Yes; I would like to comment briefly that in a society where the population is aging at a rate greater than year-by-year, the impact of sheer numbers alone may dictate greater social priorities for the larger proportion of the population than education for the smaller proportion. Already new societal demands are being created, such as mass transportation, housing, health care, nursing, geriatrics, job creation, welfare needs, and increased care for numbers of senior citizens, that are growing rapidly. I think these new social priorities will vie with education in the years ahead for priority status. And, we need to begin considering every possible way to impress upon our total citizenry that the quality of education we provide for today's young will be the engine of support that will pull our societal train into the next century and that the quality that we provide today is a great imperative. And second, of course, that life-long learning can increase the opportunities for our society to move ahead and to meet global challenges as well as the challenges that we face here at home.

Mr. **Akaka**. Let me conclude by making one more comment and then I will ask for questions from my colleague, Mr. Kildee. My point in raising these questions is only to tell you the solution Hawaii has to that problem. That is, to go into a statewide funding system, a centralized system where it eliminates floating bonds or getting votes on bonds, and has the legislature appropriate money for education. About 48 percent of Hawaii's State funding goes to education. This is where, then, the young parents would have the edge in voting and they put in the people who can help them get the money for education. This might be a kind of solution for the States that do not have a centralized educational funding system.

At this point, then, let me turn it over and ask my colleague for any questions.

Mr. **Kildee**. I am going to ask a question and then run to make a rollcall, but I would like to ask a question of Dr. Berry. I really appreciate very much your reference to my community education bill. Apparently the Office of Management and Budget, however, does not share your enthusiasm because they did not recommend any increase in the budgeting for community schools this year. Indeed, if my figures are correct, they may have recommended a slight cut. And, I do know the problems because I served on the Appropriations Committee for many years in the State legislature. I know of the gap in communication between your department and OMB and sometimes the friction that does exist there. But I would hope that you convince OMB of the value of community education. I come from the city which I call the birthplace of community education. Dr. Spencer spoke of his 87-year-old mother teaching and I am really happy to hear that. My mother is 78 years old and is a student. She is involved in community education at Homedale School, the area where I was raised. At 10 o'clock at night, the place is still ablaze with lights and my mother is one of the reasons one of the lights is burning there. And I think it is really important.

In Flint we are closing some of the older schools. But we are building a brand new, multimillion-dollar school in what we call the Doyle School area. We are building a completely new town within a city, creating a community there, and there is no way—in Flint—that there can be a community without a community school.

Now, the people could go elsewhere. There are schools on the fringes, but they really want their community schools. So ingrained are people of all ages that they have to have that community center which is the school. And I really appreciated very much your reference to my bill. Please get back and talk to OMB and——

Dr. **Berry**. I will do that and let us hope that they will be willing to put a little bit more money into it next time around.

Mr. **Kildee**. Very good. I am going to ask one more question and then I am going to run because I want to make the rollcall. In your written testimony you state that Federal and State programs based on the number of students can hurt school districts and that is basically how we do fund in most States with a certain formula on students. What do you propose to counter this?

Dr. **Berry**. There may be a number of other approaches. People who work on school finance in the various offices in the Education Division would suggest several. One is to simply look at the cost in a district without regard to the head count or the enrollments, and have some kind of weighting which would account for the differences in the services that have to be provided for that population. So there are other bases which one can use for determining that cost. I would suggest that States and local districts ought to look at that rather than assuming that funding must always be geared simply to head counts or FTE's or enrollment figures.

Mr. **Kildee**. Is HEW doing anything specifically to provide any expertise to——

Dr. **Berry**. Yes, we provide technical assistance for what we call school financing projects out of the NIE, and out of OE, and also out of my immediate office on finding ways to develop new plans for school finance.

Mr. **Kildee**. Thank you very much. I am running over to vote. I do not know whether you are going to adjourn now. I want to first of all say that I am going to quote your statement on my community education bill.

Dr. **Berry**. All right. [Laughter.]

Mr. **Kildee**. Very widely.

Dr. **Berry**. I will be prepared.

Mr. **Akaka**. Let me express the gratitude of this committee for your presence, your testimony and your statements. They have been helpful and will aid us in our work on this committee. Again I want to say thank you very much.

This committee hearing is now adjourned.

[Whereupon at 1:45 p.m. the hearing was adjourned.]

Additional Questions Asked of Dr. Sandra Hofferth by the Chairman

Question 1. In all your projections you rely on the Census Bureau's Series II fertility projection. But there is some possibility that fertility could be much lower or much higher than 2.1. What would be the effect on child care services if fertilty increased to say 3 children; what would be the effect if fertility stayed at its present level of about 1.7 or 1.8?

Answer. I chose the mid-range projections of the Census Bureau, because I believe that these are most likely. In any case, I do not expect slightly higher or lower completed fertility to affect my projections for child care services very much. This is due to the offsetting effects of variation in fertility rates.

On the one hand, a somewhat higher level of cohort fertility might reduce the need for child care services over the need I projected, whereas a lower level (e.g., 1.7 or 1.8) might increase demand somewhat. These paradoxical expectations result from the following reasoning: A higher level of fertility will probably reduce the labor force participation of the mothers of young children, whereas a lower level will raise their participation. Mothers who are not working are less dependent on child care services, though they may use them occasionally. Analyses of the Panel

Study of Income Dynamics done at The Urban Institute show clearly that women who have a large number of children work less over their life-time than do those with a small number or none. Reduced labor force experience, in turn, lowers the chance of a woman being employed in any given year, regardless of the ages of her children. On the other hand, the decreased need for child care services due to reduced labor force participation rates may be offset by the large total number of children in the case of the higher fertility scenario.

Therefore, slight variation in fertility rates should not affect the overall prediction of greatly increased need for child care services by 1990, as long as the present relationship between childbearing and employment stays about the same. There is some evidence that this relationship is weakening, however. For example, recent cohorts have more and earlier labor force experience, which suggests they will spend more years working, regardless of the number of children they have. If some drastic new conservatism were to sweep the country and we returned to the "feminine mystique" of the "fifties" or if a wave of socialistic fervor were to sever the relationship between childbearing and employment, then my projections can be tossed in the waste basket.

Question 2. You noted in your testimony that there will be additional increases in the needs for child care services. As this occurs, do you foresee a decrease in the quality of such services? Should licensing procedures be tightened?

Answer. Although decreased quality is possible, I do not believe it likely. Most studies indicate that parents are highly conscious of the quality of care their children receive. Therefore, parents who have some choice about the care of their children should choose good quality care. Since choice of care is frequently based on its cost, the children most "at risk" of obtaining poor care are those of the poorest families. However, day care is subsidized for the children of families receiving public assistance, and many centers operate on a sliding scale of fees. The next most "at risk" group are children of parents who do not qualify for public assistance, yet who have low incomes. Choice of care, and thus quality, could be ensured by expansion of subsidies as well as through increasing the availability of "flexitime," part-time employment, and extended parental leave with reemployment rights. Information on what to look for in choosing a day care provider or caretaker is available (from, for example, the Day Care and Child Development Council) and might be used in conjunction with a non-profit information service for parents.

The FIDCR are general as they now stand, with the exception of the staff-child ratios. It appears as though the recommendation of the experts will be to increase the flexibility of even these standards. Research indicates that the size of the groups rather than the number of children per caretaker may be both more important to the well-being of the child and a more realistic way to take into account the changing nature of the day care environment over the course of a normal day.

I am in favor neither of more specific nor of more stringent regulations at the federal level. Unfortunately, this sounds like the status quo. However, I believe that, although certain safeguards on federal funds are necessary, regulation of community activities and concerns is more appropriately carried out at the community level. Communities differ widely in characteristics and needs; to regulate is either to be so general as to be ineffective or to ignore variation entirely and, therefore, harm the smallest (or largest) communities.

Question 3. You have referred to chains of day care centers emerging. Is this pattern likely to continue and to grow in the future?

Answer. Most such chains do not accept the very young children (under 3). Therefore, they are competing with public and private not-for-profit pre-schools. At the present time, fees to parents are higher in the non-profit centers and schools, except for those whose children are subsidized, than in for-profit centers. As with any business, if chains keep costs down and quality up, they will survive and grow. Day care centers, in particular, keep costs down by keeping child-staff ratios high and staff salaries low. At the present time, federal regulations do affect private chains as long as they do not accept federally subsidized children or other federal funds. State and local licensing regulations do apply. Increased regulation would raise the costs of providing care, which would raise fees to parents. *Free* public preschools would put chains out of business, unless the latter were to provide services the former could not provide. Because of the cost of such care, it is unlikely that for-profit chains will move into the provision of care for infants and toddlers. Even if they survive and grow they will not solve the problem of the increased need for day care over the next decade.

Additional Questions asked of Mrs. Katherine Eisenberger by the Chairman

Question 1. Recently there has been much pressure on school systems to return to the so-called basics and do away with so-called frills. Do you advocate a return to basics? Would it be more difficult to return to basics if our teaching force were younger?

Answer. "Back to Basics" is a buzz word in education right now. I would advocate curriculum redesign to meet the needs of a changing student population. Elimination of the "frills" is a simplistic solution to the complex problem of establishing curriculum priority areas. The need is not to "cut" program but to revise and redesign educational program offerings. Teacher age has little to do with the "back to basics" move.

Question 2. Dr. Berry mentioned in her testimony that funding for population education was included in the Elementary and Secondary School Act for fiscal year 1979. How do you feel about including population education into our school curricula? If you think it should be included, at what grades should it be introduced and what materials should be included?

Answer. Population education should be included in the school curriculum at the secondary level. Of particular import for young people is basic understandings in the relationship of age groups and societal needs. For example, with ever increasing numbers of older citizens requiring health care, geriatric programs, housing, and recreation facilities new societal demands will emerge and vie with existent programs for priority status. This, in turn, will create expanding career opportunities in some fields while constricting employment opportunities in others.

Young people making career choices should be aware of such population—specific economic dynamics. Population education would develop and provide insights into future societal needs.

Curriculum materials should focus upon and analyze the dynamic interactions of age-specific groupings with employment opportunities, economics, emergent societal needs and demands, as well as the projection techniques of population study. A greater demographic awareness would have helped our society to plan more realistically for the baby bust decades.

Question 3. What can the federal government do to encourage school district mergers where that is clearly needed?

Answer. Financial incentives, grandfather provisions assuring similar levels of funding, categorical aid inducements—all would encourage school district mergers.

A caution should be mentioned: It might be wiser to encourage small school districts to begin operating community-based educational programs in lieu of merging with another district. The social and educational benefits of a community service program might prove greater in the long run than consolidation.

We need to begin thinking less about the size of a district and more about the quality level of service it provides. "Smaller and more selective" vs. "bigger and better" is a concept whose time has arrived.

Question 4. You have talked a greater deal about managing decline? How can we start convincing people that decline is not necessarily a "bad" thing? How can we get them to believe that "Small is Beautiful"?

Answer. Changing the American mind-set from "bigger is better" to "smaller and more selective" is one of the greatest challenges we face as a society. It requires a shift from quantity to quality . . . as mentioned above in reference to school district mergers.

Encouragement of such concepts must come from a variety of sources and the most obvious is the federal government. Funding guidelines should reflect a policy which embraces "quality of service" vs. "size in numbers".

Not only is managing decline more difficult and demanding than managing growth but it requires a new and different set of leadership skills. Decline management demands a keener sense of balance and proportion in the allocation of scarce resources, a deeper understanding of human behavior, and a greater awareness of the priorities for the future.

In growth, the passage of time tends to balance errors of judgement in resource allocation; in decline, time compounds them. Growth years promise job expansion and rapid career advancement; decline portends job consolidation. Growth encourages and provides for multiple priorities; decline condenses priorities and necessitates focus on only one or two. In varied ways and for multiple reasons decline management will challenge the most able leader/administrator.

There exists today a need to develop in-service training programs for school administrators to acquire these crucial decline management skills. Direct funding to administrator associations for the purpose of developing such in-service training programs would be a great step forward.

It is quite possible that we hold onto the concept of "bigger is better" because we have no positive experiences with or preparation for planned non-growth. The solution to the problem of changing a "mind-set" might well be as simple as providing the training and skill requisites necessary to manage non-growth or stabilization.

ADDITIONAL QUESTIONS ASKED OF DR. HARRIET FISHLOW BY THE CHAIRMAN

Question 1. In your testimony you stated: "The demographic art of local migration forecasting is in considerably less statisfactory state than even annual fertility forecasting." Do you think that the Census Bureau should become more involved in making small area projections or do you have other ideas on how to improve our ability to predict population size?

Answer. Small area forecasting, especially forecasting local migration, will never be completely satisfactory since so many uncertainties are involved. Of course, methodologies can always be improved upon, however, I believe we could improve our planning performance substantially simply by making use of the techniques already known and by being aware of the possibility of demographic fluctuation.

One thing the Census Bureau could do is to facilitate population *estimation* in sub-county areas like school districts. It would be of great use to administrators to have some idea how many children under five (by year of age) were *currently* living in the district. I referred in my testimony to a Census project I had heard about last year called the "Dual Independent Map Encoding File" or DIME Project, which permits investigators to pull out data on pre-selected subareas from larger census surveys. I do not know what is currently being done with that, but if it worked it would prove useful.

Also helpful would be manuals or how-to-do-it guides on short term enrollment projections techniques. At the least, such material would sensitize school administrators to the possibility of demographic change. It would perhaps be most useful for Census to work through the state boards of education or population units in distributing such materials. Training programs for state demographers, with special attention to the problems of small area estimation and forecasting, might prove useful as well.

ADDITIONAL QUESTIONS ASKED OF DR. ROBERT SPENCER BY THE CHAIRMAN

Question 1. The present day university faculties are generally quite young and far from being ready for retirement. More and more we see departments that are entirely tenured. What are the prospects for teaching jobs for young PhD's? What can be done to help bright young people get into the teaching profession so that new ideas can be infused into what may well be an increasingly stagnant profession?

Answer. I see no difficulty in departments being entirely tenured so long as everyone is fully employed in teaching and research, and so long as tenure was gained for reasons of scholarly and teaching competence. On the other hand, a tenured-up department of old cronies is a disgrace to academe and a block to employment opportunity for qualified young aspirants. Moving a sleepy tenured faculty is probably more difficult than moving a graveyard. However, there is hope because there are options which have not been tried very much. One is to give surplus tenured faculty an opportunity to be retrained (re-educated?) into a related teaching or research field so they may continue professional work or teaching until retirement. Other useful tasks and responsibilities are possible. We cannot assume that a surplus of tenured faculty due to stagnation of a department or to enrollment decline is always bad. It can provide opportunity for retraining, too. There are well-established policies now for early retirement or for layoff of tenured faculty in the event of declining enrollments or fiscal disaster at an institution. Good policy planning and the safeguards of due process are crucial for the operation of such policies, however. Bright young people might also be adaptable to retraining. I don't agree that the teaching profession is necessarily stagnant or that stagnation is primarily related to the protection of tenure. Young people have been known to stagnate, too, for lack of drive, good training, or other reasons.

Question 2. Many people are predicting a massive return to college by older people over the next few years, how can universities change their academic emphases to serve this possible new clientele?

Answer. The average age of students at Sangamon State University has been 29 and 30 ever since it opened. Older people, whether previously highly educated or not, make hardworking, conscientious students and in many cases provide good models for young people. Moreover, presence of older students gives a "one-room school" effect to good teachers in classes of uneven talent. They are good catalysts for learning. Universities need only to welcome older people to classes—on a non-credit basis as a starter for the timid, and on a full-credit basis for those who are qualified and can keep up. SSU has a program called "The Second Time Around" to assist older students and women with their reentry into higher education. Again, imaginative administrative leadership and a few strong teachers can set patterns for others in any institution seeking the older student. Weak transcripts from the dim past should be ignored if motivation and literacy are strong. Academic amnesty is a good policy for older students, as well as for many younger ones who want to try again.

Question 3. In your testimony you were quite critical of the demographic projections insofar as they have affected your university. Do you have any recommendations as to how we can improve our projections of the population in the future?

Answer. We can only do our best as demographers, and the planners of SSU were right about a university for Springfield but a bit off schedule for its eventual size and diversity. Demographers are not prophets, after all. The errors in SSU's planning have not been catastrophic. They have taught us much—painfully, yes, but a valuable learning experience for others not so well funded or with added troubles to carry on the other shoulder at the same time. Future demographers might take into consideration regional and intrastate community growth patterns. In my earlier statement I suggested, and I believe quite rightly, that Springfield/Decatur make up a little "Sunbelt" of downstate Illinois. Although other universities will decline in enrollment, SSU can expect steady but modest increases in enrollment because of its unique programs, style, and—over the long term—its academic reputation.

Question 4. At the hearings on May 25, Congressman Scheuer asked the following question: "How can you see Congress helping and moving along on this process of variety within unity, creating a more diverse education system. . ." He then asked if you could give us some specifics in terms of policy and program. Could you address yourself to this issue at this time?

Answer. One very helpful program would be a Federal program for tenured faculty within 10-15 years of retirement who could, with the help of post-doctoral training, find more promising career opportunities than a tenured-up department can offer, or whose institution faces a fiscal crisis. This would be a resourceful, imaginative, and dignified approach to making career openings for younger people, too. And not too expensive. Some protection for retirement annuity benefits should be provided also.

A second suggestion: a study commission might examine the long-term impact upon educational leadership, management styles, and curricular flexibility of present state and federal regulatory schemes relating to higher education. If institutional autonomy, educational leadership, and other features of educational quality are impaired, then one might consider schemes of simpler reporting, of deregulation, and the like. On the other hand one should remember that some state coordinating boards have reduced the anarchy and competitive mayhem among public higher educational institutions at the public trough, have strengthened and protected new and weaker institutions needing budgetary and planning protection, and have cut the fat from older institutions needing that treatment.

I know of no satisfactory way to reduce the number of colleges and universities in a given state any more than one can find a sure, safe method for shutting down military bases and government installations. More than such facilities, colleges and universities are deeply rooted in the culture as well as the economy of a region.

ADDITIONAL QUESTIONS ASKED OF DR. MARY BERRY BY THE CHAIRMAN

Question 1. Is your department taking demographic data into consideration in developing policies?

Answer. Definitely yes. Demographic considerations are taken into account in virtually every major policy analysis activity.

Question 2. Do you have professional demographers on your staff?

Answer. We are presently recruiting for a demographer to be assigned to the staff of the National Center for Education Statistics. Additionally, NCES has a number of staff members with backgrounds in demography. We work closely with demographers from the Bureau of the Census and in some other departments (such as Agriculture).

Question 3. Is the Department concerned with long-range demographic analysis and planning?

Answer. Yes. See above.

Question 4. In some areas of the country where large sections are losing population, particularly rural areas, there is a logical reason for districts to merge. Yet local pride often opposes mergers.

What can the Federal Government do to encourage mergers in such situations?

What guidelines should be developed to assist districts to merge or not to merge in light of declining enrollments?

Answer. Since as early as 1965, and certainly by 1970, rural areas in general stopped losing population. To the contrary, the historic flow of people from rural areas to urban areas has now reversed itself, and rural areas are growing more rapidly than anywhere else.

This phenomenon calls for a reassessment of the nearly century-old policy of encouraging mergers in rural areas. At present, for population reasons alone, the Federal government should suggest that mergers *not* be encouraged. Rural population growth will likely force the expansion of many rural schools.

Further, there is much more than local pride involved in opposition to mergers of schools in rural areas. It appears to be sociologically true that a school provides a much-needed community focus in many rural areas. To close a school is to take the heart out of a rural community. Since may people today are moving to rural areas to gain the advantages of living in smaller communities, the government might well act to support the maintenance of the quality of life in rural areas by supporting the maintenance and improvement of rural schools, rather than seeking to merge them. Such a practice is now common in many other industrialized nations, including countries in Europe.

Finally, there has been considerable development of intermediate service agencies in States to deliver service on a cooperative basis to associated school districts. Nearly every state has legislation on the books for such agencies, and more than half have them in operation. The Federal Government's Teacher Center programs and efforts to improve the national dissemination networks all are contributing to this development. In general, this suggests that a more viable policy than mergers for rural schools is to bring improved services to them via intermediate service agencies. In many parts of the country, school consolidation has reached the limits that are sensible; bus lines cannot be made much longer than an hour, and the costs of fuel are escalating rapidly. Therefore, it is appropriate to recommend and support policies other than mergers for most rural areas.

Question 5. How can we improve our enrollment projections so that we obtain neither a glut nor a shortage of college students studying to become teachers?

Answer. A major way to improve enrollment projections is through increased use of demographic analysis in the policy planning and decision-making process, particularly at the state level. Demographic analysis can improve the accuracy of enrollment projections, underscore future contingencies and help policymakers logically prepare for meeting those contingencies. Little in the way of demographic analysis is utilized at the state level because of a lack of resources. A significant step that could be taken would be to provide support that would allow demographers to be hired at the state level. This would assure that demographic analysis would become a major component in state policy planning.

FISCAL IMPLICATIONS OF CHANGING AGE STRUCTURE

THURSDAY, JUNE 1, 1978

U.S. HOUSE OF REPRESENTATIVES,
SELECT COMMITTEE ON POPULATION,
Washington, D.C.

The task force met, pursuant to notice, at 9:30 a.m. in room 210, Cannon House Office Building, Hon. Dave Stockman, chairman, presiding.

Members in attendance: Mr. Stockman, Mr. Scheuer, Mr. Gephardt.

Present: Dr. Williams, task force director; Dr. Bouvier, professional consultant; Ms. Parks, professional staff; Dr. Martin, research associate; Ms. Tames, research assistant; Ms. Stolp, research assistant; Mr. Rafferty, research assistant; and Mr. Lieberman, intern.

Witnesses: Mr. Robert A. Derzon, accompanied by Mr. David R. McKusick; Mr. Elmer W. Smith, accompanied by Mr. Francisco Bayo; Dr. Robert Clark; Dr. Robert Butler, accompanied by Dr. Jacob Brody.

Mr. STOCKMAN. We turn today to the fiscal implications of a changing age structure of the population. Before I turn it over to the panel of witnesses, I would like to say that I think this is probably the single most significant topic area that we're going to be dealing with in this set of hearings. It will have direct bearing on some very important policy decisions that will be facing the Congress this year and in the years ahead.

I would like to begin by saying to the panel of witnesses that we're delighted to have you here today, and we appreciate the fact that you've been willing to take your time and present to us what I think is some very important information on this topic.

We will put your prepared testimony in the record. We would ask that, as we proceed in order, you try to distill your comments into a 5 or 10 minute presentation. After we've finished with each of the witnesses, we will open the forum for general questions from the members to the panel and perhaps for some interchange among the witnesses.

Let us begin now with Dr. Derzon, the Administrator of the Health Care Financing Administration from HEW.

STATEMENT OF ROBERT A. DERZON, ADMINISTRATOR, HEALTH CARE FINANCING ADMINISTRATION, ACCOMPANIED BY DAVID R. McKUSICK, SUPERVISORY ACTUARY DEMOGRAPHICS AND SPECIAL COVERAGE ANALYSIS STAFF, HCFA

[Prepared Statement in Appendix on p. 658.]

Mr. Derzon. Mr. Chairman and members of the committee, it's a pleasure for us to be here today representing HCFA. We will follow the guidance we've been given, which is to present simply an outline review of our statements.

To my left, is Mr. David McKusick, supervisory actuary of the demographics and special coverage analysis staff in the Health Care Financing Administration. He and I will do our best to respond to questions concerning the Health Care Financing Administration.

As you know, the Health Care Financing Administration is a new agency of Government as a result of reorganization of the HEW carried out last spring. Just a year ago, in fact, this month, it brought together medicare and medicaid, the two principal health care financing agencies and programs for both the aged and the poor in the United States.

We share your concern that the Federal Government must rethink present and future health care policies and health care financing policies which do take into account the demographic changes which you and we are studying. I'll just trace for you briefly the origin of medicare and medicaid.

These programs were enacted in 1966, because it was recognized by Congress that the aged and the poor did not have adequate financial protection for the high costs of health care. Hospital expenses for the aged, as many of your know, are roughly three times the expenses of the nonaged group. That ratio existed in 1966 and it exists today. The majority of the aged in the United States have very low incomes; they are incomes obviously reduced well below those which they had during their working periods. They do not have adequate private health insurance coverage when they leave their work environments, and most employers which had good health plans terminated those coverages for retired employees. So, there were very obvious reasons why medicare was enacted by Congress, and of course medicare has gone a long way toward meeting many of the costs of the health care needs of the aged.

I am not going to review the demographic changes that you've been studying in any significant detail. I think you will have, both in our papers and in other papers, adequate demonstrations of what is happening. Today, three-quarters of the population of the United States do reach age 65 and, once there, men are expected to live another 14 years and women another 18 years.

There are trends in the average life expectancy, but these trends are rather slow. I think there are some very interesting charts in Dr. Butler's testimony that basically discuss that.

Nevertheless, we are extending, through a variety of both medical means and lifestyles, the life expectancy among the aged. There's been that dramatic decline in fertility rate since 1955. I'm not going to be the one to predict what's going to happen in 1985 on that particular count.

There will be a senior boom after the year 2000, and that shows up in virtually all estimates. In 1900, 4 percent of the population was 65 and over; in the year 2030, we will have 18 percent of a larger population—roughly 55 million people—among the aged category.

The group that we watch most closely in health care financing is the group that's over 75 years of age, because the over-75-year group is the group that begins to have very much higher costs in the medicare health expenditures.

Mr. **Stockman**. Could I interrupt there?

Mr. **Derzon**. Yes.

Mr. **Stockman**. What is the primary reason for that? I see in your numbers here that there's a very large differential: $712 per capita for 65 to 69 years; $1,200 per capita for 85 years and over which is 70 or 80 percent more. Is that primarily because of more acute inpatient hospital treatment, or is it due to a very high proportion of people in that age category in skilled nursing care or other institutional settings where the Federal Government would be paying the costs or somebody else would be paying the costs?

Mr. **Derzon**. The answer to that question is that most of those higher costs of the medicare program are clearly on the hospital side. The medicare benefit for nursing home coverage is light; it represents a relatively small proportion of the total cost.

The incidence of institutionalization in nursing homes begins to be seen at around age 80. The average age in nursing homes now is something in excess of 80 years of age, and close to 25 percent of the over-85 are in institutions, in nursing homes, or in intermediate care facilities. Medicare pays relatively little on that because it has a relatively small benefit package.

So in medicare, the higher costs that we begin to see are primarily in the hospital area for more frequent and longer stay hospitalizations.

Mr. **Stockman**. Do you have some numbers you could provide to the committee on frequency of admission, length of stays, and so forth?

Mr. **Derzon**. We do.

Mr. **Scheuer**. Also could you provide information on the seriousness of the ailment and whether the patient could have been cared for in some setting other than a tertiary hospital bed: Either in a nursing home, another health-related facility, or perhaps at home with some kind of Government funded home nursing service.

I have the feeling that our reimbursement schedules, which favor inpatient hospital care rather than ambulatory or home care, are part of the problem. You state in your written testimony that your "goal is to deemphasize institutional and inpatient settings and emphasize ambulatory outpatient and home health care services."

But yet, if you talk to any hospital administrator, they'll tell you that, in the world of reality, they can't perceive of this new shift in emphasis. I hope that you're going to be doing something about changing the reimbursement schedules to put meat on the skeletons of what are now frankly, glittering generalities and innocuous platitudes.

If you can prove me wrong, I'd be the happiest man on earth, but when I talk to hospital directors, they constantly say, "When are they going to make if feasible for us to provide a great deal of the health care that is now provided on an inpatient basis, on an outpatient basis?"

Mr. **Derzon**. Congressman, I'd like to respond to that. You may know that in my previous reincarnation, I was a hospital administrator, and I do understand what hospital administrators are telling you.

Under the current laws, there's no question that coverage is more generous for inpatient hospital care than it is for ambulatory care services and generally, for out-of-hospital services or even out-of-nursing home services under medicaid.

Mr. **Scheuer**. Have you prepared any recommendations for Congress that would change this? I serve on the Health and the Environment Subcommittee, which has jurisdiction over medicaid. I have heard of no recommendations coming from your office or from the executive branch for a whole restructuring of the reimbursement schedule. It seems to me that this is necessary if we are to rationalize the health care system.

Mr. **Derzon**. Well, first I'm going to react by telling you that Congress has directed us to do a major study of home health services and home health benefits, and that we are on schedule. We'll be producing a very comprehensive report on home health services and on the extent to which that benefit should be increased.

Medicare is now paying more of its program cost for home health services than it is for nursing home care. There is a significant increase in medicare expenditures for home health services, yet it's still a small proportion of the total medicare program.

Mr. **Scheuer**. You mean most of it is being given through tertiary hospitals.

Mr. **Derzon**. I don't think it is through tertiary hospitals necessarily. The vast majority or about 60 percent of the hospitals in the country are small community hospitals with under 200 beds. These hospitals account for a little over 20 percent of total hospital expenditures. So, we are a country of many, many small hospitals. Many of which are quite economic and low cost.

There's a presumption in the question you've raised that there are an awful lot of patients who are in acute care hospitals that could be in some other setting. We have some evidence, through PSRO review and utilization review, that there are patients who are kept in institutions longer than necessary because of lack of available nursing home beds or some other kind of supportive care.

Mr. **Scheuer**. That is also because hospital directors want to continue collecting that reimbursement if they don't have somebody else to put in that bed.

Mr. **Derzon**. Well, hospital administrators are very ambivalent about all this. They keep complaining about cost reimbursement, which is what they have now and which favors keeping patients in. Per diem reimbursement allows them to be fully reimbursed for all allowable costs.

When we begin to talk with hospital administrators about prospective rate setting programs, such as cost containment legislation, which puts a prospective ceiling on their revenues, they want to complain to us, because they recognize that, in some cases, they may be spending more money than their revenues would allow. So, hospital administrators have a lot of ambivalence about these matters.

Mr. SCHEUER. Do you think that for an average medicare patient the community hospital provides the appropriate level or intensity of medical care? Or for many of them, is the reimbursement schedule the reason that he or she is there?

Mr. DERZON. First of all, I do not think that most patients are in hospitals because of the reimbursement schedule. Certainly all of our utilization studies would basically confirm that the vast majority of patients are in hospitals because their physicians feel it is medically necessary for them to be at a level of care that most community hospitals can provide.

There is a feeling on our part that there are more services than are necessary in some community hospitals. Indeed, we feel that in some tertiary care hospitals, planning has been very bad. There is too much duplication of services, with not enough hospitals working together with each other. This, in my view, does not come about principally because of reimbursement issues, but rather because of the individual desires of institutions to be one-stop health-care shopping centers.

I do want to point out to you that in the medicare program, coverage is better for inpatient services than for outpatient services. As you know, in the case of outpatient services, 80 percent of reasonable service charges are covered by the medicare program; 20 percent are out of the pocket. There are deductibles on both part A and B. So, the patient's out-of-pocket costs for ambulatory services may be larger than they would be for a reasonably short stay in an acute care hospital.

It has been argued, and I think correctly, that some change in that structure, in terms of relative benefits for outpatient-inpatient care would be desirable, and should change at some point, when we can figure out how to do that and how to finance it.

Virtually all changes that we're talking about would probably raise the cost of health expenditures in the United States, including most expansions, in our view, of home health services. That is not a reason for not doing it, believe me. I think that all of us would argue that there are many patients who could be treated more humanely in their homes; but most of our analysis, so far, would show that the trade offs of additional home health services or out-of-hospital services would not be major dollar savers, as closely as we can calculate.

There are differences of opinion on this, and the GAO study that was done for the House suggested another conclusion to that. But on balance, I would have to answer your remark by saying that I don't think that there are inordinate numbers of medicare patients in hospitals for medically unnecessary reasons.

Mr. SCHEUER. You think most of them are at the appropriate level of care.

Mr. DERZON. I think we have greater problems in the nursing home area, where levels of care are much harder to measure and where differences between what is provided in a nursing home, what is provided in an extended-care facility, and what could be provided in a sheltered housing arrangement or something else are much narrower and harder to read.

Mr. **SCHEUER**. Thank you.

Mr. **STOCKMAN**. Thank you. We're sorry for the interruption. We've used up some of your time, so if you'd like to proceed and complete your statement, please do so.

Mr. **DERZON**. Well, I just want to touch a little bit on medicaid, because medicaid and the issue of population growth and population changes in the general economy of the poor are very relevant questions to your committee.

In 1971, there were over 4 million people over the age of 65, by and large covered by medicare, who also received medicaid benefits. In 1977, that number declined to about 3.7 million aged Americans who received medicaid. We expect that, by 1984, perhaps there will be even fewer aged, at least over the age of 65, who will be on medicaid—actual numbers.

This is coming about because of better income levels for the aged through social security, through private pension funds, and so forth. I want to be careful about drawing any conclusions, however, because even though the average income of the aged is moving up during their retirement periods and so forth, through other benefit programs and social security, nevertheless, the aged are people of very modest income and will always need substantial support for their health care expenditures.

Mr. **STOCKMAN**. Are these numbers a gross head count—4 million and then a drop to 3.7—including someone who might only have his part B premium paid by medicaid?

Mr. **DERZON**. These would be people who are covered in buy-ins, I believe. Dave, is that right?

Mr. **MCKUSICK**. Yes.

Mr. **DERZON**. These would be the group that's covered in buy-ins plus other groups that are taken over, because medicaid, in a way, is supplementary health insurance for particularly the person who has longer term institutional problems and institutionalization needs. Medicaid tends to fill the gaps the medicare does not provide, particularly for people in the very elderly group.

There are about 1 million people over the age of 65 in nursing homes in the United States, and I think there is one set of numbers with which you should be quite familiar. Between the age of 65 and 74, about 12 per 1,000 in that age group are institutionalized in nursing homes, but over the age of 85, about one-quarter are in nursing homes.

So we almost have a geometric progression. As people age in that population group over 65 and as one projects ahead for the numbers of people in the over-85 category in the United States, one sees obvious adjustments in terms of growth in longer term care facilities; as well as great needs to find and explore ways to avoid having people institutionalized at all.

Health care spending for the aged is one of the facets of this problem that needs to be examined. There has been enormous escalation in health care costs, and health care costs have performed differently from any other costs in the economy. This is one of the reasons why we have deen adamant in trying to get successful passage of cost containment legislation in the fastest growing part of the health field, hospitals. Hospitals are the biggest element within the medicare budget and compete about equally in the medicaid budget with nursing home expenditures.

Part A costs, which are primarily hospitalization costs, have grown from $3 billion in fiscal year 1967 to about $18 billion in fiscal year 1979. These are part A costs under the Medicare Act. I think the numbers are interesting, because if one looks at the new proposal for a separate Department of Education outside HEW, you see a $17.5 billion amalgamated program, which is just a little less than what we will be spending in medicare alone for hospital care for our beneficiaries next year. This is just to get a sense of proportion about health care costs.They are very dynamic, very dramatic.

People argue that part of this cost growth has been in terms of additional beneficiaries—the population is aging. We're adding about 500,000 people annually to the medicare rolls because of the aging of the population, but the actuaries tell me that of the large expenditure growth from $3 billion to $18 billion, only about $1 billion was due to the increased enrollment of the aged, and the remainder is due to increased costs per person served and to inflation.

Mr. **Stockman**. Would you mind addressing that? I know it's a bit off the beaten path, but both Congressman Scheuer and I serve on the Commerce Committee, and Congressman Gephardt is on the Ways and Means Committee. So, we're all very much involved in this hospital cost containment program.

Mr. **Derzon**. I think that what I'd like to do is make a comment or two and maybe ask Mr. McKusick to tell you what the problems are in estimating health care expenditures in the United States and how much they're tied to health cost inflation rather than to population changes. The great hazard in projecting expenditures in this field is what's going to happen to the inflationary picture.

Mr. **Stockman**. Well, I was just hoping that you could address this issue in three parts: One is obviously demographics or numbers of people; the second is cost per unit of service, but that has to be broken down into price change and input change. This is where I believe that there's been some failing on the part of the adminstration.

If the primary reason that the cost per stay or admission has risen so rapidly is that you're getting a better quality of care because of more nursing time behind it, more diagnostic operations, more therapeutic treatments and so forth, that might not be all that bad. We may have a difficult time finding a way to finance that care, but it might not necessarily be a bad thing in the sense of waste, inefficiency, and so forth.

Mr. **Derzon**. Well, let me give you a picture on this which I think will be helpful to you.

Hospital expenditures have increased about 17.3 percent per year for the last 3 years. This is roughly 2.5 times the increase in prices of other goods and services in the economy. We are about to announce expenditure levels for fiscal year 1977. Every American spent or had spent on his or her behalf, $737 for personal health care services. That's up, as I recall, over $70 from last year. We had a change in fiscal years, so we have numbers that may not have been published before, but I will simply tell you that the rate of expenditure is up $70 to $75 per year per person in the United States.

Now, the problem of course, is that maybe the average family—your family and mine—can afford that change for our family. We can afford that change in cost. But you and I have some other responsibilities, I think; and we recognize those responsibilities by taking care of the poor of the country and taking care of unfinanced costs of the aged. That is, they did not themselves put money into trust funds or some other set-aside.

So when health care expenditures grow $70 or $75 per year per capita in the United States, that's extremely burdensome for a family of four or five, and it's extremely burdensome for that same family which has to meet the costs of the poor and the aged in order to give them equivalent access to equivalent care.

So the number we watch, of course, is this particular per capita expenditure. Now, in looking at that per capita figure, a large percentage, 40 percent, is in hospital care costs and hospital cost increases. It's the biggest single item. The next one is about 19 percent.

Mr. **Stockman** If I may break in here, we are going to have to answer a quorum, but we'll be right back in 10 minutes. I'd like to continue with this because not only is it relevant to some policy decisions we have to make right now, but also it is even more relevant in terms of any kind of medium-term projection we might make. By putting the numbers together with continued rapid real growth rates in cost per capita, you have some rather dramatic financing problems with which to deal.

Mr. **Derzon**. Fine.

[Brief recess taken.]

Mr. **Stockman**. I think we're ready to proceed again. Would you like to continue, Mr. Derzon?

Mr. **Derzon**. Yes. I'd like to come back to your question having to do with some of the causes for inflation in hospital costs particularly. I think we were dwelling on that, because that's been the primary concern in HEW over the last year.

There's no question that the hospital product has changed from what it was in years gone by. We are not talking about the same hospital day of care in 1977 that we were in 1967. The general picture would suggest that about 10 percent of the expenditure increase has been attributable to the increased numbers of beneficiaries or to changes in benefit structures or what-have-you that are legally constituted changes that one would expect with changes in the statutory program.

Mr. **Stockman**. Are you talking about medicare only? You're breaking down the medicare cost increase?

Mr. **Derzon**. No, I'm talking about all health care costs.

Mr. **Stockman**. All health care—hospital and nonhospital?

Mr. **Derzon**. I'm talking about all health care costs and then I'm talking all hospital costs and talking about all hospital costs.

Mr. **Stockman**. OK.

Mr. **Derzon**. This group of increased numbers of aged in the population would obviously have a bearing on increased hospital expenditures. We estimate that to be roughly 10 percent.

There is about a 36- or 37-percent increase in health care costs that is attributable to the changes in the product, changes in the mix. That is changes in intensity of service, changes in new technology, and so forth. The balance is in general inflation. Part of that is catchup costs in health manpower; part of it is more available, higher priced manpower.

In my early days in New York City government, we couldn't get graduate nurses. I'm sure today there are many more registered nurses in the city hospitals of New York City than there were 10 years ago. So there's been increased saturation of higher skilled staffs.

The technology of medicine has obviously brought with it many, many benefits, and with it, many attendant expenditures. The hospitals of the United States and the American Medical Association agree that health care or hospital expenditures do not have to go up 16 or 17 percent a year; but they believe, along with us, that that rate of escalation can decrease. They want to do it voluntarily; they want to take a little more time to get there. We would like to mandate it or at least have a strong mandatory element in any voluntary program, so that health care expenditures could go up at roughly 1.5 times the rest of the economy.

We have never said that health care expenditures or hospital expenditures could be totally stabilized. We never said that was desirable or even practicable. But, we would like to get it down to roughly 150 percent of the increase in other goods and services and stabilize this inflationary component within better parameters than has been possible in the past.

I think that even the health field itself agrees that this can be done without sacrificing the quality of care by being a little more prudent in terms of management practices and perhaps a little less single minded in terms of expansion of services, some of which we, and I think the hospital field, now realize are probably unnecessary.

Mr. STOCKMAN. I appreciate that. I had a little different perspective on it; and, of course, the problem is that you take different time periods and you measure different variables. I have put together an analysis, which I have distributed to the members of the Commerce Committee, which shows a kind of different reading. Now, I know there was some catchup on wages and some other factors during the late 1950's and 1960's, but let's look at the increase in the 1970's.

After you remove the general price inflation from the economy, the GNP deflator, we find that the residual or the excess increase in cost per admission, 88 percent is due to input increases and only about 12 percent is due to price changes. In other words, prices for hospital input such as manpower, linens, food, or energy are going up faster than the rate of general inflation in the economy.

Now, what are some of those input increases? Well, we find, for instance, that between 1971 and 1976, the number of diagnostic X-rays per average admission increased from 1.5 to 2.0, or by 26 percent. Also, we find that the number of laboratory tests per admission rose dramatically, from 15.6 to 25.0, or by 60 percent, in a 6-year period.

We find the number of physical therapy treatments per admission rose from 1.2 to 1.8, or by 50 percent during that 6-year period. Even more significant is the fact that the number of man-hours per admission rose by 20 hours, from 148 to 169, or by 14 percent. For registered nurses in particular, there was a fairly large increase from 23.8 to 29.2, or 23 percent.

Now, these are just illustrative examples of the measurable input increases per admission; and if you factor those out, you find that that's about 90 percent of the excess cost growth above the general rate of inflation in the economy.

Now, the problem I have with the cost-containment approach is that I don't think any case has been made that all of these input increases represent the changing nature of the hospital product or what that statistician called an "average admission" or an "average patient day." I don't think it's been demonstrated that all or part of this is waste; and you want to cut it in half in the sense of lowering the rate of increase to 1.5 times the general price level.

Do you think that it can be demonstrated that these input growths have been too fast and that they have not been cost-effective? This is important, because this is where you're going to have to get your slowdown in the cost per admission growth. It can't come out of prices, since you're not going to have any effect on general price trends in the economy. It has to come out of the rate at which the product's changing. Is that a desirable thing?

Mr. **Derzon**. I'd very much like to study that analysis, because I think that your description of input costs is probably quite accurate, but I would like to see where the data bases came from and, in fact how the conclusions were drawn.

But on the assumption that they're fully accurate, then the question is: What do you do about that? Are we just going to let hospitals spend as much as they want, make as many input costs as they want?

Where hospital occupancy rates have declined the personnel are probably still there; the man-hours per admission are going up. They're going up because of inadequate planning, because of too much ambitiousness on the part of individual institutions, or they may even be going up because the radiologist has been suggesting to his colleagues that he has some new diagnostic tools that perhaps they'd like to avail themselves of, and there's time and staff awaiting his patients.

There's a lot of marketing going on in hospitals for patients and for diagnostic and therapeutic procedures. We think the hospitals are correct when they say they can reduce, moderately, the rate of increase in costs. We don't disagree about the end-points anymore. The hospitals have already suggested getting down to roughly 11 percent, which is very close to what the administration wants.

So we all think it can be done. I would hope that you could come to that same conclusion—that that could be done with relative ease, because there is excess capacity and there probably are excessive services in many institutions in the United States or services that are being offered that don't have commensurate benefit to the cost of those services.

My own feeling is that if the Government wants to, it can keep buying as much as hospitals are willing to spend. And, if we are willing to simply subsidize that element of the economy, it will be at the expense of all the other needs of society, fine. But I don't think that the administration has made up its mind that it wants to go entirely in that direction, and I doubt that Congress really does, because there are so many competing needs.

Right now almost all of the discretionary expenditures in HEW are being eaten up by hospitals. Of the $6 billion that has been proposed by the President for additional health expenditures in the 1979 budget in HEW, $5.5 billion or thereabouts is in my agency, the Health Care Financing Agency, and half of that is going to hospitals. And, that was with the assumption that there'd be $730 million saved in cost containment, so without legislation it's going to be much worse.

Now, what that means is that not only is health eating up education and other needs within the Federal Government and HEW, but health is now the largest single item in terms of medicaid expenditures in many States of the United States. It's eating up the State budgets, and most of it's going to hospitals. There are other ways to spend money on health care besides hospitals.

So I think the arguments are very persuasive for enacting strong legislation—maybe along a voluntary track with clearly a mandatory element in it, so that people, if they don't perform, are going to have to perform. But, it seems to me that if you want to get a handle on health care costs, you start with hospitals. Hospitals, collectively, with their boards and in their communities with their physicians, can begin to deescalate the rate of escalation, which is all that the Federal Government has been asking.

Mr. **Stockman**. Go ahead, Congressman Gephardt.

Mr. **Gephardt**. I appreciate your statement. I also appreciate the fact that the last year and a half of dialog about health care cost and hospital cost containment has resulted in some substantially voluntary changes that are being made all around the country. So I think there is credit to be given to the administration for the fact that the subject has been brought up in such a forceful manner.

I have grave concerns about the particular legislation that the administration proposed for some of the reasons that Congressman Stockman has brought up. I believe that somehow we've got to affect and change the use of the whole system by both the users and the professionals and others who work in the system. Health/hospital cost containment is certainly one approach to that problem.

We have had and now have a number of mechanisms in place, some of which have just begun to work, also to affect those relationships and those decisions. I think that the financing mechanism, as you suggest in your testimony, has to be very important in this whole equation.

I would ask you if your agency or others have been coming up with alternatives to the way medicare reimburses as a way to affect this decisionmaking process in a more constructive manner?

Mr. **Derzon**. I think that's an excellent question, Congressman, and I appreciate your comments as well on the impact we've had. We've had a sentinel effect on hospitals and they have gotten busier about containing their costs. I think that that's good for the American people and it's good for medicare and medicaid.

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Nevertheless, the costs, I have to tell you, are still going up substantially ahead of the rest of the economy, even in spite of the rather bleak inflationary picture at the moment for all goods and services.

HEW is doing a number of things and will be proposing, in its 1980–81 legislative package, a number of additional changes in reimbursement, in coverage, and hopefully in terms of eligibility and other issues which concern us deeply in both of these programs.

In terms of reimbursement, we are financing nine experiments on prospective reimbursement in State ratesetting, and some of these are proving to be quite productive. On others, I think the evidence is still out. We're waiting and seeing, but we continue to support these demonstrations because we think there are interesting alternative ways in which to finance hospital care particularly.

These prospective reimbursement experiments basically target reimbursement levels or revenue levels. They do, in fact, what cost containment does nationally in the State by setting certain targets, sometimes based on budgets of hospitals, sometimes based on rates or fees, sometimes based on formula. These are different approaches along State lines. The one in Maryland is the closest to Washington and perhaps is one of the more successful experiments that's taken place so far.

Whether they will succeed in deescalating the rate of increase in costs significantly on any large scale remains to be seen. They have been started in States that tend to have the highest per capita costs in hospital care, and so those States are still on the high side in terms of hospitalization cost per capita in the population, despite the fact that many of the ratesetters believe that they have saved significantly millions of dollars in their States.

But prospective reimbursement versus cost reimbursement is one approach. We have testified already to the House Oversight Subcommittee about our dissatisfaction in the way we reimburse physicians. We believe the present formula in law is weak because it provides for usual customary and prevailing reimbursement for physicians, and we believe that is inflationary and unfair. It exacerbates differences between rural and urban physicians, between physicians in primary care and in specialties, and so forth. We think that it has had an inflationary effect.

We, as you know, have a major effort in terms of HMO's (Health Maintenance Organization) development, which is a capitation approach to financing. Although only a small proportion of Americans are covered by HMO's, probably no more than 6 or 7 million at the present time, the rate of growth has been high, and there are things the Federal Government can do to stimulate that.

There are many things we are doing to encourage business to begin to shop for health care services on behalf of their employees the way they shop for other commodities for their product lines. That effort is moving, I think, quite successfully at the present time.

We will be proposing and have already tossed out on the table ways in which medicare and medicaid patients could participate in capitation programs. There is concern that we have been perhaps overly ambitious in that regard, and so we are back reconsidering our reimbursement proposals for medicare and medicaid under HMO's. We'll be dealing with the substantive committees on that issue as HMO legislation works its way through the House and Senate.

We are moving on the prudent buyer approach. We have just issued certain regulations which the Secretary promised to the public a few months ago, so that we can buy services at the lowest cost reasonably available in the community for equivalent products needed by beneficiaries of the medicare program, and we are encouraging States to do the same thing in the medicaid program.

States, as you know, have a good deal to say about how they pay for services in the medicaid program, and many have come up with rather imaginative and interesting ideas. Each time we do this, the providers of service argue that we are trying to buy cheaply or are being inequitable or unfair. You've heard that cry from the pharmaceutical industry about the MAC program, which is the program that Congress enacted a few years ago that we are busily trying to implement at the present time. The thrust of this program is to buy drugs that are commonly available at the lowest possible price on behalf of beneficiaries of the medicaid program.

So there's a lot of activity going on in the Government to try to reduce costs and the rate of inflation other than through the device of hospital cost containment. We cannot put all our hopes on that particular approach, although we think that's a terribly important one since it represents 40 percent of the health expenditures of the country and more than that in our own programs.

Mr. GEPHARDT. Well, I'm very happy you are reporting today that all of these things are going on. Each of them is in a different area and it's difficult to press one button and have the problem go away, because it's a complex, frustrating, intractable kind of problem.

I would suggest to you that, in my mind, all of the things you've mentioned, plus HSA's, PSRO's, trying somehow to deal with the private insurance question and how it's structured, HMO's, and jawboning, which, I guess, is a lot of what we've done—all together offer to me perhaps the greatest hope for solving the problem.

My concern with a particular piece of legislation called hospital cost containment—I don't want to belabor that point—is that I'm not sure about the results of the type of health care that we continue to offer in the country. I'm not sure that the decisions that will be made by individual administrators across the country will be the decisions that ought to be made.

I guess the ultimate solution, if there ever is one and I'm not sure there is one, is a very complicated variety of approaches, some of which we've mentioned here this morning. I commend your effort and I hope it works. I do have some concerns that that legislation is not the answer, but I do think that the combination of efforts that you're putting together does constitute the answer.

Let me ask briefly another question that goes to your second point, and that is the philosophy of the medicare program. Some of the statistics in your testimony are really alarming; when you consider that, in 1967 the cost of medicare was $3 billion, but in 1985, you think it will be $41 billion; when you consider the baby boom coming into the 65 category; and when you consider the fact that one-fourth of the people over 85 wind up in institutions.

I'm particularly taken with the part of your testimony that says that we have to rethink the philosophy of Medicare. Can you tell me what the philosophy of it is today?

Mr. **Derzon**. I can tell you what the philosophy of the medicare program is because it's really well spelled out in the legislation that enacted the medicare program in 1965. Basically, this was a program that described in very detailed terms a benefit structure for people who reach the age of 65. It was a two-part benefit: A part A benefit and a part B. It was for acute-care services. It was for persons age 65 or over who had episodes of acute care illnesses. In fact, the legislation even talks about spells of illness. It deals with acute care. It does not deal with preventive services. It deals, by and large, with not quite first-dollar coverage, but it tries to moderate the out-of-pocket cost by having modest deductibles and coinsurance.

Mr. **Gephardt**. Can I just break in right there? You said it does not deal with preventive treatment, is that correct?

Mr. **Derzon**. Clearly not.

Mr. **Gephardt**. Do you think that medicare moneys are used today for preventive treatment, such as testing and diagnostic services, in hospitals?

Mr. **Derzon**. They are supposed to be used for services where patients have bona fide complaints and problems identified by a physician. Then, the doctor proceeds to order diagnostic tests and therapeutic services based on a patient's complaint of an illness or an episode of an illness.

I am sure that there are situations where some preventive service as a part of that visit has been provided to a patient, who has then billed the program or his physician has billed the program. Preventive services cover quite a wide range of services, including genuinely good medical advice about how to live better. I am sure that we have physicians in the United States and staff members in physicians' offices and in hospitals that are helping people live more sensibly.

But basically the program wasn't designed to do that, and there's nothing in the legislative history that I'm familiar with that basically argues that this is a preventive program.

Mr. **Gephardt**. How many medicare dollars today go for long-term care? Do any medicare dollars go for that?

Mr. **Derzon**. Very few, because almost all the long-term care benefits proceed off of an acute care hospitalization. The long-term benefits are home visits—a hundred under part A and a hundred under part B—and a nursing home benefit of very modest scale based on a spell of illness in an acute care hospital.

I have to ask Mr. McKusick if he can tell us how much of the benefits paid out are for the long-term care services.

Mr. **McKusick**. About 5 percent of total benefits.

Mr. **Gephardt**. Five percent of total benefits go for long-term care as spelled out in the specific formula following an acute care visit, is that correct?

Mr. **McKusick**. That's right.

Mr. **Gephardt**. OK. And you're saying that we really need, in terms of the demographics that we see, a rethinking of the philosophy of medicare.

Mr. **Derzon**. Well, I think that it's time. This program is more than 10 years old. There are questions that we have been raising with our staff, who have been with the medicare program since its inception, about the worthiness of many of the requirements; about whether or not there are preventive services that could be covered under the medicare program through changes in legislation.

There's a preventive health care task force that's working within HEW to come up with a clearcut strategy on prevention, and that preventive program, I am certain, will extend into proposals of both medicare and medicaid.

Medicaid does have more variability. Medicaid has some mandatory services, one of which is family planning by the way, which I think most people would agree is a preventive service. But medicaid obviously covers a great range of services in some States where the benefit coverage is generous, and so we have many more preventive services in medicaid in those States that have seen fit to invest in prevention.

But I have to tell you that one of the great heartaches in the medicaid program is the unevenness, the inequities that exist in the benefit structure between States.

Mr. **Gephardt**. Thank you, Mr. Chairman. I'm sorry to have taken so much time.

Mr. **Stockman**. Well, I think we've opened up a pretty important issue. We want to move on here, but I just want to make one comment, because this discussion of preventive services and care, I think, has opened it up.

You can use preventive maintenance on a car and prolong its life or its usefulness for a certain period of time, but sooner or later it's going to wear out. It seems to me, when we're talking about medicare and projected costs in future years, that we are dealing with people who, because of the aging process, have biological systems that are failing. There may be some limited gains possible from preventive services, but not nearly what would be possible for those in the younger age groups.

I've been looking at some of the causes in the growth in admissions, treatments, and so forth for medicare. There has been a very large jump in the number of cataract operations, for example. Well, in the past, before elderly people had the financing, they just lost their eyesight and suffered the pain and everything else that goes with it.

I've seen a very large jump in the number of operations for artificial joints and hips. In the past, people just suffered from arthritis and the pain became excruciating, but that was part of the process of aging. Now there is financing available through medicaid, so that we are relieving part of the agony, I guess you might say, that went with aging.

We see it in lung ailments, too. The death rate 15 or 20 or 25 years ago from acute pneumonia of people 70 years and older was pretty high. Now we place them in intensive-care units for long periods of time and they survive another winter.

So all this raises a fundamental question in my mind: we have a serious problem of rationing here, and this is where I disagree very strongly with the administration. I look at these numbers, and I don't think that the major reason for the increase in cost per admission or hospital costs generally is due to a lot of duplication and waste, and an excess of services, and the fact that there may be some special unit in the hospital trying to market its wares, and so forth.

I think there's been a demonstrable improvement in the quality of care, and most of the responsibility for the double digit inflation rate in hospital costs is due to the fact that we are providing something tangible and real for the medicare population; in particular, the aged population, that is improving their life circumstances. It's improving their health, it's extending their longevity, and it's making life a little easier in their later years.

So the point is, if we're talking about rationing, we've got a very serious moral problem. We can ration gasoline and we can ration oranges if we have a shortage. However, I think that when it comes to rationing health care and rationing life and death, we haven't even begun to grapple with that.

That is why I think this hospital cost containment legislation is superficial and expedient. It will only obscure the real nature of the problem and maybe delay our facing that for a couple of years. If you project the absolute number of elderly, the absolute number of elderly over 80, and their proportion of the population, and then factor in the tremendous rate of progress that has been made and is being made today in the quality of health care, 10 or 20 years from now we will have a rationing problem. You have told us about how the costs are going up and how it is eating your budget up. But, what kind of dilemma will we have in 20 years? It will be many, many more times severe than it is today.

I'll just end my comment by saying that I would hope that we have some work going on and some creative thinking going on in HEW to grapple with that problem: How do you ration life and death? I think that's really what we get down to in this whole hospital cost issue.

Mr. **Derzon**. Well, Mr. Chairman, with respect, I would like to differ with you and maybe sort out a few points while I am doing that.

First of all, we don't talk about this program or programs like this as rationing programs, but rather as ways to move hospitals toward greater efficiencies in the way they operate, and better planning and better division of resources, which is entirely possible. Hospitals are loaded with fixed costs and when they are planned badly, when they do not share services with other institutions and so forth, you and I——

Mr. **Stockman**. But isn't that the function of the HSA's?

Mr. **Derzon**. Well, yes, it is the function of the HSA's, but they have limitations on how far they can go.

Mr. **Stockman**. Well, how will a cost containment cap help improve interhospital coordination and allocation of resources? This will be applied on a hospital-by-hospital basis. I see no reason whatever to think that a containment cap, a revenue cap, is going to have any effect on planning on an interhospital basis.

Mr. Derzon. Let's just take one simple example of a situation that drives up hospital costs. Two hospitals close together in a small town both have maternity services. It's very expensive to run those two, but you could save a fair amount of money if you ran one and maybe traded another service with the other hospital and gained through the merger of those programs or the integration of those programs, say, 10-percent savings on 25 percent of your expense base.

Well, a hospital that was faced with some limitations on revenue could find that they could live comfortably within those revenue limits simply by finding an efficiency in that kind or program. So there's every evidence that capping revenues is possible, but we're not capping them. If you remember, we're escalating them and there are plenty of passthroughs. There are a lot of ways in which hospitals can justify higher rates. So, it isn't a cap.

But it does force hospitals to begin to think, both inside their institutions and collectively with their other hospitals, about better ways to do the same things. And, I think it has much to recommend on that front.

I want to tell you that I do think that the miracles of modern medicine are, in fact, miracles, and they're important. They're important to my family and your family and to all Americans. I think we have a country that, hopefully, is rich enough to afford the benefits of modern medicine and technology to all Americans.

The problem we get into is when you start to look at some of the items you've mentioned: cataract surgery, for example. The ratio of cataract surgery now to an age-adjusted population in medicare would show that we are taking out many more cataracts than we took out earlier in the program. It's the most frequently mentioned surgical procedure in the program.

Now, is American eyesight changing that fast on an age-adjusted basis? I don't think so. We have more ophthalmologists than ever before, and we have a system of compensation which doesn't discourage physicians from doing surgery.

So our problem is to find a way in which, obviously, cataracts are taken out when they have to be taken out; no sooner and no later. This is the dilemma that we face on one of the procedures you've mentioned.

There's strong evidence that joint surgery—particularly hip surgery—is of great and lasting benefit to patients. It was a technology that was tried, proven, and then expanded. But we have other technologies that have just been drummed in without any real tests of efficacy. Yet, the Federal Government is faced with the problem of paying substantial sums of money for that.

So we've got a very real responsiblity in government, it seems to me, as well as in all parts of society, to figure out how to introduce technology in a reasonable manner—that technology which is truly beneficial—to all Americans. We've got a big job ahead of us in getting more effective consumerism in health care. I think the American consumer who knows more about his body and knows more about his health is going to shop more effectively for his care. We've got a lot to do.

And if we don't do a lot of these things, it seems to me that our successors are going to be in a terrible jam. They're going to be faced with this mammoth increase in population, business as usual, and absolutely no taxable resources—not taxable base on which to deploy these benefits, and then we will see rationing of the worst kind.

Mr. **Stockman**. I appreciate very much your comments, and we've pressed you a little bit here on a few issues, but I think it's a terribly important area and I think we're all oriented toward the same objective. It's a matter of what tools and means and steps and pace that you go after this.

But I think it would be very helpful to all of us, to concentrate our thinking and our efforts up here, if you would give us a business-as-usual projection. This will be my last request. We want to move on, because health care financing is the miniproblem. Next we'll get to the maxiproblem, social security financing, which may dwarf this issue into insignificance.

Have you developed any kind of business-as-usual case 25 years out in terms of the rate of growth in costs which we have now for various health services for the elderly and what that might mean for the budget? You don't have to give us the numbers now, but if that information was available, I think, whatever our position on one particular piece of legislation, like hospital cost containment, it could help us to focus on what's facing us down the road.

Thank you very much.

Mr. **Derzon**. Thank you.

Mr. **Stockman**. We'll turn now to Mr. Smith, who is the Associate Commissioner of Social Security for Program Policy and Planning of the Social Security Administration.

STATEMENT OF MR. ELMER W. SMITH, ASSOCIATE COMMISSIONER OF SOCIAL SECURITY FOR PROGRAM POLICY AND PLANNING, ACCOMPANIED BY MR. FRANCISCO BAYO, DEPUTY CHIEF ACTUARY, SOCIAL SECURITY ADMINISTRATION

[Prepared Statement in Appendix on p. 675.]

Mr. **Smith**. Thank you, Mr. Chairman, and Mr. Gephardt. I'll have to ask your indulgence: some gremlin or virus has crept into my voice box, so I'm a little hoarse this morning.

With me is Mr. Francisco Bayo, who is the Deputy Chief Actuary of the Social Security Administration in charge of long range projections.

I'd like to make about five of six points, and then I'll be open for questions from you gentlemen. But first, I'd just like to point out that probably more information is provided about the economic and demographic assumptions underlying the social security programs of the old-age, survivors, and disability insurance than almost any other governmental program. This is illustrated by the annual trustees' reports, which are submitted to the Congress and contain really a very large amount of data regarding the demographic and economic assumptions underlying the income and the outgo figures.

To just give you one example, not only is information provided about these assumptions, but information is also provided about the sensitivity of the forward estimates to these assumptions. For example, the most recent trustees' report shows us that if the ultimate fertility rate in the country were to be 2.3, which is our so-called optimistic range projection, rather than 2.1, the actuarial deficit in the last 25 years of our projection would be reduced from 4.10 percent of taxable payroll to 2.88 percent of taxable payroll.

So, as I say, I think there's really a rich amount of information which is provided—probably more than almost any other program that I know in the public sector.

Now, the first point I'd like to make may sound simplistic, but I think it's important, and that is that the last two or three trustees' reports have pointed out quite carefully that we're dealing with a change. When we're looking at the demographic profile of the future, we're looking at something which has broad implications for society as a whole; not just the income maintenance programs, not just the OASDI program, not just the hospital insurance program.

We're really talking about almost a total new way of looking at this country. We're certainly looking at changes in consumption patterns. Certainly there would seem to be implications for differential uses of labor versus capital in the future. Certainly there will be some choices, which probably will be made differently from today, between leisure and work, between savings and consumption. And certainly there would seem to be at least the base for some shifts among the various sectors of our society and economy.

For example, what will happen to education and child-care expenditures in the future as a proportion of the total expenditures of the society when that segment of the population declines?

Now, there is a tendency to focus on the OASDI programs, partly because we do project income and outgo and program implications for 75 years, which, again, very few other programs do. The hospital insurance projections, for example, are made on a 25-year period, not a 75-year period. Furthermore, we project them with precision. Everything is reduced to statistical formulation and ultimately comes out at a bottom line actuarial surplus or deficit.

Now, even though there are three forward projections made, we have a tendency ourselves to talk about the intermediate-range projection, and we have, essentially, I think, acclimatized both the Congress and members of the public to talk about the intermediate range projection. This again, I think, gives a greater degree of precision to that set of estimates than possibly it warrants, because after all, we are talking about making some projections over a fairly long period of time into the future about some very volatile matters.

What, in fact, will be the fertility rate—not only 75 years in the future but 15 years into the future? You have demographers essentially in some degree of controversy with each other about whether the present relatively low rates will continue, about whether we've just gone through a period of deferred births and there will be an upsurge in the fertility rate, or what-have-you.

So I think that it is terribly important to have these projections recognized for what they are, and that is: they are not abolute predictions of things to come, but rather cast a range or a set of possibilities of how the future might look.

One of the things which I think is terribly important and is sometimes overlooked when we examine just the aged part of the population in the future, using current assumptions for fertility, is the fact that the overall dependency ratio in the future, under our intermediate range projections, will never be as high as it actually existed in 1975. That is, the number of persons in the population under age 20 and those in the population 65 years and older will not be as high a proportion of the working-age population over the next 75 years as it actually was in 1975. So that is something to be kept in mind as a fairly significant point.

Mr. **Stockman**. Do you have some specific numbers on what you might call the dependency ratio?

Mr. **Smith**. There are precise estimates on the dependency ratio associated with the trustees' projections, which are included in the 1977 OASDI trustees' reports on page 13.

Mr. **Stockman**. Fine. Thank you.

Mr. **Smith**. Looking just at the aged part of the population, in about 2020, there will be about two workers for each OASDI beneficiary, whereas at the present time, there's a little over three workers in the population for every OASDI beneficiary. But that does have to be measured up with the point I was making just a moment ago that the overall dependency ratio will not be as high during the next 75 years, using our intermediate range assumptions, as it was in 1975.

Now, let me move for a moment to the OASDI programs. As you're aware, the future forecasts are affected by a variety of assumptions, some economic and some demographic. Before the 1977 amendments were enacted by the Congress, the economic factors were extremely important because of the double indexing of the benefits; benefit amounts were affected by both rises in wages, as well as rises in prices. Our future projections were very sensitive to variations in these economic assumptions.

After the 1977 amendments were enacted, however, and the so-called decoupling provisions, it meant that the demographic assumptions have a greater relative importance in terms of the future outlook for the OASDI programs than was previously the case.

However, there are other demographic factors in addition to the fertility rate, which are quite important in forecasting the future nature of these programs and the scope of the benefits and the costs.

Mr. **Stockman**. Before you turn to that, I'm afraid we're going to have to break again. We have another vote on the floor of the House. We'll come back as quickly as we can.

Mr. **Smith**. Fine.

[Brief recess taken.]

Mr. **Stockman**. Mr. Smith, would you like to continue?

Mr. **Smith**. Thank you. I was mentioning some of the demographic factors, in addition to the fertility rate, which importantly affect the projections for the old-age, survivors, and disability insurance programs.

One of them certainly is the question of mortality rates. This year's trustees' report reflects more optimistic experience in the mortality rates than was true of last year's report, for example. Over the next 75 years, it projects a 19-percent improvement in mortality rates.

Questions of marriage rates and family size are important, too. I'd like to remind this committee that although the portion of the population that's aged is very important for these programs, there are many people drawing benefits who are, of course, not aged. For example, at the present time, there are 5 million child beneficiaries drawing benefits under the OASDI program.

Then there are certain derivative influences which are quite important, like labor force participation rates of women and migration rates. One of the things I would point out is that, as you look at the 1978 trustees' reports, although we are using for our intermediate range projections an ultimate fertility rate of 2.1, which in some people's minds represents a zero population growth rate, you will note that the estimated population continues to grow throughout this period of time. Part of that is due to the assumptions made about migration.

Mr. Stockman. Are you talking about immigration?

Mr. Smith. Immigration, right.

Now, in addition to these demographic factors, of course, economic factors are still quite important. Unemployment rates, increases in real average wages, consumer price increases from year to year are still quite important in terms of affecting the future income and outgo picture for the OASI and DI funds.

If we look at the fertility rates per se, we see that they obviously have a very important effect. I've mentioned earlier the sensitivity of the estimates to the fertility rates by giving an example of what the difference in the actuarial deficit would be for the last 25-year period of these 75-year projections.

At the present time, we are benefiting from the post-World War II baby boom by having persons in the work force who are adding to the income of the funds. Of course, when these persons retire, they will add to the expenditures as they draw benefits.

Under the current trustees' report's assumptions, using the intermediate range estimates the outlook for the next 75 years shows that for the next 25 years, there will be an actuarial surplus of 1.02 percent of taxable payroll. During the second 25 years, there will be a deficit of 1.11 percent of taxable payroll. Using some of the surplus accumulated in the earlier years, however, will carry the OASDI funds, on a combined basis, approximately through 2025 before they get into a deficit position.

For the third 25 years, the actuarial deficit will be 4.10 percent of taxable payroll—a sizable deficit figure, as our actuaries remind us from time to time.

When we look at the entire 75-year period, we see that there is a deficit averaging 1.40 percent of taxable payroll. However, as I say, I think it's important to look not only at the 75-year average, but to look at the breakdown for each of the 25-year periods, because the experience in each one of those 25-year periods is considerably different.

Now, what are the implications of these projections and the effects of the demographic assumptions on not only the income and the outgo of the program, but on the possibilities for program change? I am one person who believes that it is very healthy that the current dialog is proceeding in the public press and among various interest groups at the high pitch that it is, concerning the

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future program shape and outlook of the social security program and the ways in which it should be financed.

I note that I can't pick up leading national newspapers—practically every day and that has certainly been true this week—without seeing an article concerning either the financing or the future benefit scope and structure of the social security programs.

Certainly these demographic assumptions, together with the economic assumptions, begin to raise questions about the retirement age. As Secretary Califano has indicated, in his speech before the American Academy of Political and Social Science, we may have to rethink the whole question of when is a person retired and when is a person not retired, for example.

It certainly has implications for the benefit structure. For example, as there is a greater labor force participation of women who have their own earnings records rather than relying on their spouse's earnings records, we may have to look at the question of the benefit structure, including the way dependents' benefits are now calculated.

In fact, Congress, partially recognizing this and partially pressed by dissatisfaction with the current dependents' benefit structure, is requiring the Secretary of HEW to study this problem and come up with a report listing various alternatives, to be presented to the Congress later this year.

The question of taxation of benefits, I think, will arise, again, partly as a byproduct of the fact that people may want to work later or the economy may encourage them to work later and later, both as their health permits and as the value of their services becomes more important as the now working-age population continues to shrink in relationship to the OASDI beneficiaries.

And perhaps, as people live longer and draw benefits longer, we may have to think about alternative ways of updating the benefits. It may be appropriate to continue into the future the updating of benefits by using only the CPI as a method of keeping them up to date; or it may be that as people live longer, draw benefits over a longer period of years, and as there are technological and other improvements in society, we may want to find a way to have the beneficiaries share more fully in the productive growth in the society which occurs at that point in time.

These are only a few of the questions that are raised as a result of looking at the forward projections for the income and the outgo of the old-age, survivors, and disability insurance programs. I'd be happy to attempt to answer any questions related to these remarks or to the statement which was filed for the record.

I'm sure if you have any questions about the way in which our estimating is done, Mr. Bayo would certainly be pleased to assist.

Mr. STOCKMAN. I just have one brief question. We'll have more later, but maybe we can hear Dr. Clark and then discuss the general topic, because he will be speaking on some of the same issues.

I'm just wondering whether you've ever done any analysis of how accurate or how good the track record of the Social Security Administration is on its demographic projections. Now, you've been doing it for roughly 40 years. What would happen if you went back and looked at the 1940 report and checked their assumptions about life expectancy, or mortality rates, or fertility rates for 1977? What might you find?

Mr. SMITH. I'm going to ask Mr. Bayo, who is in charge of those estimates, to respond to that. [Laughter.]

Mr. BAYO. No, I don't believe we have tried to run any calculation based on the assumptions that we used back in 1930.

Mr. STOCKMAN. I wasn't asking you to necessarily do an actuarial calculation. Just go back to those reports and see what you were projecting for the late 1970's and early 1980's in terms of fertility rates, mortality rates, labor force participation rates, and so forth. It would be useful, I think, for you, and it would be useful for us simply because it would help to remind us how much range of uncertainty there is in this whole enterprise.

Mr. BAYO. We do publish, with every population projection, a summary of the total population that was projected in previous reports.

Mr. STOCKMAN. All the way back?

Mr. BAYO. We always do that. For example, the projection that we prepared in 1946 showed a range of total population for 1975 between 147 million and 191 million.

Mr. STOCKMAN. I think they're a little off there, right?

Mr. BAYO. Substantially off, because it was actually 223 million. [Laughter.]

Mr. STOCKMAN. I guess you didn't anticipate the baby boom. Wouldn't that roughly be the reason for that large error?

Mr. BAYO. That is correct. There was also substantial improvement in mortality that was not anticipated at that time.

Mr. STOCKMAN. Right. Well, I think we're going to really want to bear down on some of those various questions later. If it would be agreeable with you, Dick, we'll go on to Dr. Clark.

STATEMENT OF DR. ROBERT L. CLARK, ASSISTANT PROFESSOR OF ECONOMICS, NORTH CAROLINA STATE UNIVERSITY

[Prepared Statement in Appendix on p. 705.]

Dr. CLARK. Thank you, Mr. Chairman. I was asked to assess the impact of alternative retirement ages on the social security system. The idea of retirement is a very difficult issue to get ahold of in itself. A lot of definitions of what retirement is are available, depending on who's examining the issue.

In some cases, when one studies a particular measure of retirement, there can be alternative influences that might be contradictory if you were using another measure of retirement. The idea of trying to determine the factors that cause or influence retirement is relatively new to economists; most of the work has been done in the last 10 years or so.

However, there are a wide range of social and economic variables that do influence the retirement decision, not the least of which is eligibility and the generosity of social security benefits. So if one wants to examine the trend in retirement age, he has to know what the social security benefit is going to be and what the covered population is going to be.

By the same token, to assess the cost associated with any given level of social security benefits, one needs to know the labor force participation rate or the retirement rates in the economy.

With that in mind, I attempted in my written testimony to show the result of alternative retirement ages or age of eligibility on the cost associated with the social security system. To do that, I used a much simpler model than the social security actuaries used. In the particular model that I was using, to try to examine retirement age, I fleshed everything out except the demographic variables which are driving the system.

If you do that, and then compare it with the range of estimates in the advisory report, you find that they're very close indeed, because, as was stated earlier, the primary driving variables in the new estimates, given that the replacement rate has been removed from the double indexing problem, are now the demographic variables.

So with that in mind, then, we look at the cost implications of alternative retirement ages. Now, if one moves toward a system that does not have an earnings test—and perhaps Congress is moving in that direction—at least the age of determination was lowered by the 1977 amendment, or if you eliminate the earnings test altogether, then by setting an age of eligibility, you are, in a sense, defining the entire population that's going to receive social security benefits, thus eliminating some of the biases of the particular model that I'm going to discuss.

To the extent that you do have earnings tests and you reduce benefits by continued labor force participation, then the cost estimates that I present would be an overestimate.

By the same token, when you set a retirement age, you also draw people out of the labor force. For example, if the retirement age were lowered or the age of eligibility were lowered, you'd not only increase the number of beneficiaries, but you would also reduce the number of people who are going to contribute to the system.

On the other hand, if you increase the retirement age, you reduce the defined population eligible for benefits and, if one believes that the availability of social security benefits is one of the reasons people are withdrawing from the labor force, then you would expand the number of people contributing and staying in the labor force.

With that as background, look at table IV in my written statement. In that statement you can see that if one maintained the constant replacement ratio that was in effect in 1977, and used the assumptions presented in the model, a tax increase of about 63 percent would be needed in the year 2025, as compared to that in effect in 1976.

The 1977 amendments have a declining replacement rate over the next 10 years or so, and once that adjustment is made, there would be less than a 60-percent increase in a tax rate needed in that year, or a percent of payroll going to social security benefits.

However, you can then see clearly that if the retirement age were to fall to, say, 62 for full benefits, more than a doubling of taxes for social security would be needed, and for retirement at 55, you'd be faced with a tripling of the taxes.

The most significant point I wish to make using table IV is that if the retirement age or age of eligibility were at 70, the tax rates that were in existence in 1976 would be sufficient to cover the benefits of the eligible population in the year 2025. Thus, a very crucial element in moderating the higher taxes that we're faced with in terms of providing benefits to the elderly is alternative retirement ages.

I urge that we begin a specific analysis of alternative retirement ages within the assumptions that the Social Security Administration would be using in a more detailed model, and not just 5-year intervals as I have used, but single-year intervals of the retirement age. If one looks into the future, the cost is rising primarily because of demographic variables, and if you're going to maintain the same level of real benefits—or "relative benefits" would be a better term in terms of the replacement ratio—then you're either going to have to raise taxes as the beneficiary-to-worker ratio changes or you're going to have to lower the relative benefit.

Now, either of those is an option. To maintain the same level of benefits, I would argue that increasing the retirement age would be a more effective way of moderating the substantial increases in taxes that are going to be needed over the next 50 years.

Mr. STOCKMAN. Could I interrupt just for 1 second? How do I read your ratios here?

Dr. CLARK. The "T" in table IV would represent the percent of payroll needed to finance the OASI program in 1976, which I believe was 9.4 percent of payroll. So you're talking about 1.63 times——

Mr. STOCKMAN. OK, that's what I meant. Not the scheduled one, but the one that was actually in effect in 1976.

Dr. CLARK. That's right. Actually in effect in 1976. The scheduled tax increases, as was pointed our earlier, would cover this increase through about the year 2010, and then it begins to increase more rapidly after the year 2010.

But the difference in the retirement ages or the age of eligibility I think is the sharp contrast; not that I think that there's any likelihood that the age of eligibility would be lowered to 55.

Mr. STOCKMAN. But almost 30 percent of payroll would be needed in order to finance that.

Dr. CLARK. That's correct. By the same token, then, it would still be about 10 percent in the year 2050, if you raised the retirement age to 70.

Mr. STOCKMAN. Yes.

Dr. CLARK. Now, what I suggest is not that we all of a sudden one day raise the retirement age from 65 to 70, but that we gradually do that or that consideration be given to gradually doing that. Say you wanted to raise it 5 years. If you raised it one-quarter every year, it would take 20 years to do that. If the major crunch is coming in about 2010, then you'd need 20 years to do it. If you started in 1990 to gradually raise the retirement age, by the year 2010 or so, you'd have about the same tax rates that you would have already legislated without there being any particular demographic pressure.

Mr. STOCKMAN. What is the replacement rate implicit in the 1976 tax level?

Dr. CLARK. The average replacement rate in 1976 was about 40-some percent.

Mr. STOCKMAN. Forty-two?

Dr. **Clark**. I think 43 percent. Mr. Robertson's paper in the March issue of the Social Security Bulletin lists the declining ratios—the replacement ratios implicit in the 1977 law.

Mr. **Stockman**. That's only temporary. Doesn't that reverse? You've indexed the system to a real wage change. Isn't the replacement rate going to start rising again 20, 30, or 50 years out?

Mr. **Bayo**. The new law would tend to stabilize replacement rates at a level about 5 percent lower than the rates projected under the old law. That is, the new replacement rates would be stable at about the 1976 levels, except for the case of the maximum wage earner due to the fact that the earnings base was increased ad hoc to $29,700 in 1981. It would be a while before the earnings record of that particular type of worker would catch up.

Mr. **Stockman**. Yes; but for the average for the system, does this stabilize the wage index and the replacement rate?

Dr. **Clark**. It declines somewhat and then stabilizes before the——

Mr. **Stockman**. Yes.

Mr. **Smith**. Right. It was deliberately designed to do that. Congress was presented essentially with a choice of whether to have declining replacement rates over the period of the long term, or whether to have stabilized replacement rates.

Mr. **Stockman**. Right. However, isn't it correct that stabilized replacement rates against a rising real wage level, if we can project that, means a fairly large increase in absolute benefits over time?

Mr. **Smith**. Right.

Mr. **Stockman**. So wouldn't one alternative to changing the retirement age be a phase down in the replacement rate? I think price indexing is better than wage indexing since price indexing would provide for a decline or phase decline in the replacement rate. But, what would be the fiscal implications of that over the projection period? Is that in the trustees report?

Mr. **Smith**. That is not in the trustees report, but there are materials available, because we did work with the Hsiao panel's model, which called for declining replacement rates and indexing by prices, as well as the model which had been proposed by the 1985 Advisory Council.

Mr. **Stockman**. Isn't holding the replacement rate constant in the lower 40's really a major leap anyway? Prior to 1972 and the double indexing mistake, wasn't it down around 35, I think, 33 or 36?

Dr. **Clark**. Replacement rates rise continously over the early 1970's after the double index.

Mr. **Stockman**. Right. So we've really made rather a substantial leap in the long-run target that we've established for a replacement rate and then decided to hold it constant in this decade.

I know when it was double indexed it was rising very rapidly, and you got into an absurd situation where it was going to be 80 percent.

Mr. **Smith**. Right. You must recognize that in the 1977 amendments, Congress did stabilize the replacement rates at 5 percent lower.

Mr. **Stockman**. Yes; but what I'm saying is that we stabilized a replacement rate that we inadvertently created by the double indexing mistake. Is that a fair interpretation or not? Is it true that in 1971 the replacement rate was about 36 percent?

Mr. Bayo. That is about correct, and then there was a 20-percent increase in benefits across the board declared in 1972.

Mr. Stockman. Yes. Then we got up into the mid-40's, and we rolled it back a little bit and froze it.

Mr. Gephardt. I think we can learn something from history—1972 is not too long ago. A lot of the demographic data that is now before us was before us in 1972. Can you tell me what kind of policy discussions and studies of the data went into the decision that was made by Congress in 1972, which I think is a significant decision, and which led to the kind of decision we made in 1977?

Mr. Stockman. Did anybody tell them at the time that the replacement rate was going to rise that rapidly?

Mr. Smith. No; that was not projected at that time.

Mr. Stockman. Well, why not? Wouldn't that be just pure numbers that you'd plug through some computer?

Mr. Bayo. Well, what happened at the time is that——

Mr. Stockman. Whose model was at fault?

Mr. Bayo. At that time, the projections were prepared on a different set of economic assumptions. We didn't have the kind of double-digit inflation that we——

Mr. Stockman. That's right.

Mr. Bayo. And the double indexing did not create any significant problem if——

Mr. Stockman. At low rates of inflation, you wouldn't have that.

Mr. Bayo. At low rates of inflation, it doesn't create any problem. The history is that the 1972 amendments were passed as a rider to a Senate bill. It went to conference, and I don't think it was discussed by any committee at all; there was no discussion really. It was in a matter of weeks that the bill was passed.

Mr. Gephardt. Well, do you remember if there was a discussion between the involved committees in the Senate and the House and the actuaries and officials from the SSA about exactly what was being done, why it was being done, and what the policy behind it was?

Mr. Smith. Do you mean the automatic indexing?

Mr. Gephardt. Yes; for both prices and wages.

Mr. Bayo. There was a recommendation by the 1971 Advisory Council to have the automatic increases in benefits. Automatic increases were also, at that time, in both parties' platforms, and although the costs were known to be sensitive to the assumptions of the projections that we were preparing, based on the then-reasonable economic assumptions, didn't lead us to believe that there would be any problem in the financing.

Mr. Stockman. Isn't there a good lesson there. That is, that in doing these projections, we ought to consider extreme cases. If anybody would have said in 1970, "We can expect an average inflation rate of 7½ percent for the years 1972 to 1980," which is what we've had or will have and probably more, in light of the track record of the last 20 years, where inflation averaged 2½ percent or 1.7 percent, you probably would have dismissed that as a worst case, low probability projection.

Since we seem to have an ability, in the world we live in, to have these rather large swings in some basic variables, maybe we ought to start widening the range of values for each of these variables that we look at. That's why your projections for 1975, prepared in 1946, for instance, are 50 million off. They're 25 percent off in terms of population because no one said, "You could have a fertility explosion."

This is the one program where we have a long-range projection and all kinds of quantitative data; but the record of the last 30 years doesn't look too good to me thus far. Could it be because we're constraining our projections in terms of the values we assign to the key variables to what seems like what happened last year?

Mr. **Gephardt**. If the gentleman will yield. Mr. Smith, your paper talks about two assumptions: One is that the ultimate rate of unemployment will go to 5 percent over the long haul, and that the ultimate annual rate on the CPI will be 4 percent. It would seem that the very kind of assumption that I guess we were making in 1972, when the law was passed, we may be making again.

I'm linking on to what he's saying. Do you have a response to that?

Mr. **Smith**. If I may, gentleman, and then I'll defer to Mr. Bayo again.

We're getting at the very heart of, in a sense, the actuarial science and how projections are made. On the one hand, I think these projections are extremely valuable for program planning purposes. I think they have introduced, in a sense, a discipline into the system which has been recognized both by the executive branch and the Congress, and there have been serious attempts to adjust the income and the outgo side of the ledgers whenever the projections suggested that that was a reasonable course of action.

I think you gentlemen and your colleagues are feeling some heat now from the action taken at the last session of Congress, which on balance was a very responsible set of actions to try to keep the system on an even keel.

But we are, after all, dealing with some matters on which we have to do educated guesswork. That's my term—I won't hold Mr. Bayo to that term. This work, in part, relies on historical data, and in part relies on a consensus of society at any one point in time as to what is a reasonable range and what is an unreasonable range and so forth.

We do not develop these estimates in isolation. As you're aware, the board of trustees consists of the Secretary of Labor, the Secretary of the Treasury, as well as the Secretary of HEW. I might say, particularly in recent years, since I've been with Social Security, there's been a very lively dialog among both the staffs and the members of the boards of trustees about what these assumptions should be.

Now, the other point I would like to make is that we are doing very long-range projections, so I think the actuaries and other people who are in this business of making future projections are always a little conservative about taking our most recent experience, particularly if it seems to vary from a long-range historical cycle, and using that as a basis for making 75-year projections. So there's probably always a little lag if the current experience turns out not in fact to be an aberration, but to be essentially a new part of the curve for the future.

There's probably always a little lag in recognizing that, and I think you can see that when we go back over the past decade and look at the changes that were made, for example, in the fertility rate assumptions.

Frank, I'm sure you'd like to add to that.

Mr. **Bayo**. We find that, due to the 1977 amendments, the cash benefit program of the social security system has now, to a very large extent, been insulated from the effects of the various changes in the economic assumptions.

Mr. Gephardt indicated what would be the effect of, say, high inflation. We have run some calculations, and they're in the trustees' report this year. If, instead of the 4-percent Consumer Price Index assumption, we use a 6-percent assumption, the deficit will decrease from 1.40 to 0.98—that is, about 0.4 of a percent. It is a minor change in the cost of the programs; about 3 percent relative change over 75 years.

Mr. **Stockman**. Well, wait a minute, wait a minute; there's a problem with that. Is this thing price sensitive at all—the 1977 amendments? Because if you're going to assume a change in prices, you've got to assume a change in wages, too.

Now, I think what you were doing was making a one-variable change, which isn't very likely in the real world, right? And if you changed prices from 4 to 6 percent and you changed the real wage growth rate correspondingly, then it's a wash, right?

Mr. **Bayo**. If we assumed wages and prices increasing by 2 percent, keeping productivity at the same level, then it will be about a wash.

Mr. **Stockman**. Yes.

Mr. **Bayo**. Productivity will be significant. The more productivity we have in the United States, the lower would be the cost of the program.

Mr. **Stockman**. If we have a continued downward trend in productivity, then it works in the other direction, right?

Mr. **Bayo**. That is correct.

Mr. **Smith**. That's right.

Mr. **Stockman**. Do we have some low productivity projections?

Mr. **Bayo**. Yes.

Mr. **Stockman**. What is your productivity rate in the median case or the central case?

Mr. **Bayo**. The intermediate assumption of gain in real earnings is 1.75 percent per year, and on that basis we have a deficit over the 75 years of 1.40. If the gain in real earnings were to drop to 1 percent, then the deficit would increase to 2.31.

Mr. **Stockman**. From what to 2.31?

Mr. **Bayo**. From 1.40 to 2.31 or roughly by about 0.9 percent of payroll.

Mr. **Stockman**. That's about a 75-percent increase.

Mr. **Smith**. That's right.

Mr. **Bayo**. But since the program costs in total are 13.55 percent that would be about a 7-percent increase in the cost.

Mr. **Gephardt**. What's the percent of payroll today?

Mr. Bayo. The percent of payroll today would be equivalent to around $9 billion.

Mr. Smith. I don't want to appear too defensive, Mr. Stockman, because I think the points you're making are good points, but I do want to point out that the trustees' reports do give options. They may not give the worst case, but they do show what would be the experience under a variety of options.

Now, I've also pointed out, however, that there is a tendency of everybody to drift toward the intermediate range assumptions.

Mr. Stockman. The central assumptions.

Mr. Smith. Right, the central set of assumptions.

Mr. Stockman. Let me ask you this question as an institutional matter: The trustees' report is basically prepared by Social Security Administration employees and actuaries, is that right?

Mr. Smith. The basic work which is done is done by the Office of the Actuary of the Social Security Administration, that's right. I can't speak historically for what the experience was, but I can tell you that for the last couple of years, there's been some very lively debate among the staffs and, to some extent, among the various members of the boards of trustees about which rates and what assumptions would be used.

So the trustees have played a role in that; they are not just rubber stamping what the Office of the Actuary recommends to them or what the Commissioner of Social Security, as the executive secretary of the board, recommends to them.

Mr. Stockman. Well, I'm getting kind of a radical conclusion here. I know you're probably not the right person to ask, but would there be any merit to having an independent board of actuaries entirely divorced from the Social Security Administration and, therefore, not sharing in any institutional interest and so forth?

You see, I think we made a terrible mistake in the 1977 amendments, not because of the tax rates, but because we indexed the system for 75 years to real wage change. By doing that, we have made a decision to use up all the productivity gains in the economy and channel them into the social security system, or at least to have real absolute benefits rise with the rising level of wealth or real income in the economy.

When you consider all the variables that might increase the cost, such as growing resource and energy scarcities slowing down the rate of productivity growth, increasing preference for leisure as real incomes rise on the average, therefore possibly lower labor force participation—if you look at all the variables that could shift on the downside, and yet having made that commitment to tie the future benefits to real growth, it seems to me that you really leave us open to some serious financing problems and liabilities in the future.

I think it would have been far better to index it to prices and then make discretionary decisions from time to time, over the next 20, or 30, or 40 years, about, "Well, these variables didn't turn out as badly as we thought; we've got some extra resources in society, and so let's notch up the replacement rate."

But now you've got us locked into a constant replacement rate to growing real levels of benefit and to, in a sense, absorbing the product of real growth in the economy into social security and moving it toward a universal retirement income system. Now, that could be a bias in the Social Security Administration—an institutional bias.

Mr. SMITH. Mr. Stockman, if I may. First, I'll give what may seem to be an indirect reply and if I'm not getting to your points, you can call me back to it.

The question of whether or not to index a worker's earnings to the increase in average wages in the economy or whether to index to increases in the CPI was not a technical decision of the Social Security Administration, nor was it a technical recommendation foisted on the country by the Office of the Actuary. I use that term advisedly.

It was a high policy set of questions—and I respect the fact that different people will have different value judgments about whether it is a good decision or a bad decision—but it was in a sense an informed public decision. Now what do I mean by that?

The question went to two separate Presidents of the United States on what form indexing should take, and the decision, in terms of the executive branch decision, was in both cases made by the President. Second, Congress had before it an alternative. It had before it for two sessions of Congress an alternative, the recommendation of the so-called Hsiao Panel, which was, I guess, originally chartered or asked for by the Senate Finance Committee but worked hand-in-hand with the Congressional Research Service.

The kind of model that you suggest was very close to the model proposed by the Hsiao Panel, and that is that the indexing be done by prices, that replacement rates be allowed to decline, and that the Congress, as it looked at the picture periodically in the future, could make ad hoc changes.

Now, the Congress had both of those proposals before it and it chose the one that indexed to wage increases and essentially provided an opportunity for persons in the future to share in the productive growth in the economy as a part of their retirement income.

On another point, there have, from time to time, been independent bodies of actuaries established to review the estimating procedures and the methodology of the Social Security Administration. One was established, again under the auspices of the Senate Finance Committee, in 1971 or 1972. The quadrennial advisory councils—one of which is now sitting at the present time to make recommendations about the financing and the future nature of the social security programs—have hired independent actuarial consultants to review estimates and so forth. My recollection is that in almost every one of those cases, there has been no serious difference on the part of the congressionally established panel or actuaries or the actuaries retained by the advisory councils with the methodolgy and the procedures that are used by the Office of the Actuary of the Social Security Administration.

But some of the key points that you're talking about are not technical actuarial decisions. The actuaries tell us what proposed changes will cost, what will be the financial consequences and so forth, but the decisions are the highest level of policy decisions that one can make.

Mr. **Stockman**. I realize that, and I appreciate your comments, but I'm saying that when you make this basic policy choice—and really wage indexing and price indexing is one of those fundamental kinds of policy choices——

Mr. **Smith**. Right.

Mr. **Stockman**. I would hope that you don't make that by just sort of flipping a coin, although maybe that's how it happened; I'm not sure.

Mr. **Smith**. Oh, no.

Mr. **Stockman**. One of the things you do is try to look at the consequences or the impact of choosing one path over another, and that is what you give us. You say, "Let's take wage indexing," and you say, "Here is what the requirement on taxable payroll will be with wage indexing over 75 years."

But then the Congress, in the Ways and Means Committee, is not going to look at 35 different projections based on different sets of variables or permutations. They're probably going to look at your central estimate, because people just don't have time to absorb that many numbers and very carefully analyze and dissect them and so forth.

So if your central estimate is based on sort of optimistic assumptions about fertility, about productivity, and about labor force participation, it might look feasible; and since it doesn't look too scary, we stick with it because we want to provide everything we can for the public, OK?

So really, even though I know there's a difference between policy choice and the actuarial projection, the way that you present the data and the values that you assign to your central case on these key variables can cause so much change in the outcome, when you're doing long-run projections, that they put you right in the thicket of the decisionmaking whether you want to be or not. I don't think that we can make a nice simple dichotomy between the policymakers on the one hand and the statistical projection people on the other, because the way that you phrase the two or three options that people are going to look at may have a very large impact on the decision that's made.

Mr. **Smith**. No, that's quite right, and I hope I wouldn't fall into that simplistic trap, because all my training and my experience as a public administrator tells me that there isn't always this clear distinction between policy and administration.

But it seems to me that we have two or three points that are worth looking at. One is that the Hsiao Panel's model was, in fact, priced out. It was priced out to show what the difference in cost would be over the next 75 years, and that was available to the Ways and Means Committee and the Senate Finance Committee, and the staff was very familiar with the difference in the estimates.

In pricing out these various estimates—because, as you say, we can't constantly generate a variety of permutations and combinations—most of the pricing has been done in terms of the central set of assumptions. But, that same central set has been used for all pricing. It is used for pricing the Hsiao Panel; it is used for pricing the wage index system and so forth.

One might quarrel that the set of assumptions are too optimistic or too pessimistic, but the same ground rules are used to price all the legislative proposals.

Mr. **Stockman**. Yes, but you see, the productivity variable will not carry the same value which is very important, and wouldn't affect a price-based indexing system, would it?

Mr. **Bayo**. The productivity varible would have a stronger effect on a price-indexed system.

Mr. **Stockman**. OK. Dick?

Mr. **Gephardt**. Thank you. I have a couple of questions. Your paper, Mr. Smith, points out the major demographic factors that you look at. Can you tell us which of these are the most important or are they of equal importance?

I think, from reading your paper, you conclude that the fertility projections and the mortality projections are the key projections. Is that correct?

Mr. **Smith**. That's my understanding. Again, I'll defer to Mr. Bayo.

Mr. **Bayo**. After the 1977 amendments, we found that the demographic assumptions turned out to be now the most important ones. It's not a substantial difference like we had before 1977, when the economic assumptions were easily the most important ones.

Mr. **Gephardt**. So that from 1972 to 1977, or 1970 to 1977, the economic assumptions became extremely important because they changed so radically.

Mr. **Bayo**. The economic assumptions became critical because of the way in which the benefits were indexed. Decoupling did insulate the projection from the high sensitivity that it previously had to the economic assumptions.

Mr. **Gephardt**. Well, let me ask you: The way we've now structured benefits as a result of the 1977 act—will the economic assumptions continue to have that extreme importance? Will radical shifts in the inflation rate or the unemployment rate, if we're incorrect in our assumptions, have the same kind of radical effect on the status of the fund?

Mr. **Bayo**. They will not.

Mr. **Gephardt**. They will not?

Mr. **Bayo**. They will not. Basic changes in the economic assumptions will not really have a substantial effect on the long-range cost estimates. The trustees' report does provide some analysis of the sensitivity of the projection to variations in both economic and demographic assumptions.

For example, a change in the Consumer Price Index from 4 percent to 6 percent will decrease the cost by about 3 percent relatively. A change in the mortality—say a 10 percent decrease in mortality projected over 75 years will decrease the cost by about the same amount, 3 percent. A change in the total fertility from 2.1 children per woman to 2.2 would change the cost, again, by about 2 percent relatively.

Regarding comparative sensitivity, the question we have to ask ourselves is whether a 1-percent increase in inflation is more likely to happen than a tenth of a child increase in the total fertility rate? I don't think we can answer specifically this kind of question, but in my judgment both are at about the same level of sensitivity except that the economic assumptions have slightly less effect on the long-range cost than the demographic projection. That was not the case before the 1977 amendment, when slight changes in the economic assumptions had significant impact on the long-range cost of the program.

Mr. GEPHARDT. But if the economic assumptions have slightly less significance—and I put emphasis on the word "slightly"—than the fertility and mortality assumptions, from our experience in the 1970s, might we be best advised to assume the worst case, at least with regard to the economic assumptions. Rather than the middle case?

Mr. BAYO. The Congress has an opportunity to decide which one of these projections they would like to adopt, and there have been instances in which they have decided to take the most pessimistic assumption.

Mr. GEPHARDT. Well, if we take the most pessimistic assumptions for all of the factors involved, can you tell me what the 75-year projection of the deficit will be in the 75th year? You said on your middle case it would be 1.40 as a percent of payroll.

Mr. SMITH. That's averaged over the 75-year period rather than in the 75th year.

Mr. GEPHARDT. I understand. Where would we wind up in 75 years if we use the most pessimistic case?

Mr. BAYO. The deficit, instead of being 1.40, would be 3.23.

Mr. STOCKMAN. Is that over the life of the system or is that in the 75th year?

Mr. BAYO. Over a 75-year period.

Mr. STOCKMAN. What would it be in the 75th year?

Mr. SMITH. Well, for the last 25 years, it would be 7.9.

Mr. STOCKMAN. And what's the rate that would be scheduled for then? If the deficit is 7.9, you've got to add that to the payroll tax schedule in order to get what share of the taxable wages we're going to be taxing for social security.

Mr. SMITH. From 2011 on, just for the OASDI program and excluding the hospital insurance program, the tax rate for employers and employees each is 6.20—12.40 combined.

Mr. STOCKMAN. That's the base. And then you've got to add 7 percent deficit on top of that, right? So you're up to about 18 percent.

Mr. SMITH. Right, nearly 20 percent if one takes the combined employee-employer rates.

Mr. STOCKMAN. And hospitals by then will be about 8 percent.

Mr. GEPHARDT. Your figure, 1.40 or 3.23 or whatever, was just for OASDI?

Mr. BAYO. Only OASDI alone, that's right.

Mr. GEPHARDT. Well, we heard earlier that by 1990, HI was going to be in a deficit situation under current assumptions.

Mr. SMITH. That's right—under current assumptions.

Mr. GEPHARDT. So all of these assumptions and predictions have nothing to do with HI. You're just talking about OASDI.

Mr. BAYO. That is correct.

Mr. GEPHARDT. Do you have figures assuming 1977 tax rates and assuming the Hsiao Panel replacement assumptions?

Mr. BAYO. No; not at this moment. We could submit them.

Mr. GEPHARDT. Could you produce that for us and give that to us? That would be if, in 1977, we had done what we did—it would be assuming 1977 tax law and it would be assuming that we used the Hsiao plan rather than the replacement plan we used. Do you understand?

Mr. BAYO. And that would be assuming that the starting benefit would be at about the same level as was decided in the 1977 amendment. It's just how that level would change thereafter.

Mr. GEPHARDT. That's correct, that's correct.

Do you want to move to the retirement questions or do you——

Mr. STOCKMAN. Yes, because this could potentially throw another large variable range in it.

Mr. SMITH. May I just remind the committee that there are, in fact, two or three groups that are authorized by the Congress to study the program, which will be very active over the next couple of years. We not only have the advisory council, which is to report to the Secretary by October 1979, but we have in addition, the National Commission, to which the House has named two Members and the Senate has named one Member; the executive branch members have not yet been named—the National Commission on Social Security, which was authorized as a part of the 1977 amendments.

And then we have the proposal of the President, which was made in the 1979 budget, for a Retirement Policy Commission to look overall at the question of what retirement policy should be in the country, including in the private sector, the State and local sector, as well as the Federal sector.

Mr. GEPHARDT. Who instituted that last group, the Retirement Policy Commission, and are they in place?

Mr. SMITH. It was a proposal of the President and it was made as a part of the 1979 budget submission. They are not yet in place.

Mr. GEPHARDT. Can you tell me, with regard to all of these groups, will their demographic and actuarial information come from you in each case, or will it come from different bodies of experts?

Mr. SMITH. They have the option, Mr. Gephardt. They can use information which comes from us; they have the option of contracting for independent advice—actuarial advice, economic advice, and what have you. The last advisory council on social security, it is my impression, did have some independent actuarial consultants working with them. Certainly that's true of the National Commission, as well as the President's commission.

Mr. GEPHARDT. That's all. I have another question for Mr. Smith later, but go ahead.

Mr. STOCKMAN. I think we'll turn to Dr. Butler, but I just want to throw one more wrench into the works here.

I think one of the basic omissions that we have in your work today—and I'm sure that we'll never convince you to do it, but I think it ought to be looked at—is that your projections are based on a static assumption regarding feedback effects on the economy. It doesn't matter what the tax rate is, you just assume different levels of real economic growth, let's say, and then you run your demographic variables and your benefit levels and so forth through it.

But I think common sense tells you that a 10-percent payroll tax drain on the economy may have a little different effect on productivity, real output growth and so forth, than 30 percent, which we could get to under some worst case assumptions about health care and productivity growth.

It seems to me that we're going to have to start building some feedback analysis projections into the data that you supply to the Congress as well. I know you get into a can of worms there, because nobody knows in precise quantitative terms how tax rates affect incentives, economic growth, productivity improvement and so forth. But since we're getting such a wide range of possible tax burdens on the economy, it seems to me imperative that you start to look at that too.

Would that be something that the Social Security Administration would even venture into?

Mr. SMITH. Yes, sir.

Mr. STOCKMAN. Am I correct in saying that you don't do that now?

Mr. BAYO. That is correct. At the moment, the variations in the tax rate or the effects they have on the economy are not reflected in the cost estimate. We are beginning now to conduct studies to that effect, but, as you indicated, Mr. Stockman, it will be awhile before we get some kind of satisfactory measure.

Mr. SMITH. Yes. This year's board of trustees essentially charged the staffs of the three agencies with doing additional research into the various assumptions and the methods of calculating effects, so I think we'll see more of that being done.

In addition, we are beginning more intensive analyses of both the distributional and the macroeconomic effects of various methods of financing the system—whether through payroll taxes or through general revenues of value-added taxes.

Mr. STOCKMAN. Thank you.

Mr. GEPHARDT. Mr. Chairman, may I ask one question in addition to what we've asked for?

You've got a pay-as-you-go program, as we all well know. Because of swings in fertility and mortality rates—especially in fertility rates—we wind up in the position of having to tax at a certain level today in order to have enough money to get through a bulge period, and from what we understand, the baby boom of the last couple of decades creates a critical situation in that 2025 period.

I know that you haven't gone beyond 75 years, but if we assume the kind of deficit you've talked about at the 1.40 or the 3.23 and if we look farther down the road—and I know that becomes more and more difficult to do—do we get to a period, with present tax levels, where the picture becomes a lot brighter and have we, in a sense, in 1977, set a median tax rate that is designed to get us through that crunch period and beyond it or do we begin to run into cash flow problems before the stabilization effect comes into effect?

Mr. SMITH. Let me answer and see if I'm meeting your question.

For the first 25 years, we are building up under the intermediate range assumptions, considerable surplus. That surplus, together with the income during the second 25 years, carries us through about 2025—is that right, Frank—on the combined OASDI program?

But in 2025, we're essentially out of steam, and the current financing does not carry us through this critical period. Now, that was deliberately left as an unfinished piece of business—I think partly for some of the reasons that are being raised this morning: a recognition that there is volatility in these estimates; that it's very difficult to make projections over this period of time and there is a question about the extent to which you wish to tax people today for presumed events 50 years from now. There is also the recognition that the 1977 amendments place the system in relatively good shape for the next 25 years, and it essentially provided us with some time so that we could further examine, year by year, where these trends were moving and whether they were in fact moving in the directions that we now forecast or away from those directions.

It would give us some time to make some adjustments, some technical analyses, and for further policy proposals to be made along those lines.

Dr. CLARK. Mr. Chairman?

Mr. STOCKMAN. Yes.

Dr. CLARK. Let me just add that in developed countries with relatively low mortality rates, the dominant influence of the age structure of the population tends to be the fertility rate. In assumptions typically made by demographers, the idea is to assume a fertility rate and hold it constant. You therefore generate combined mortality assumptions—the age structure of the population—that give you in this particular case what we're concerned about, a beneficiary-to-worker ratio that's going to determine to a considerable degree the cost of the program—tax rate.

Now, what has always happened in the past are fluctuations around a long-term average. If the fertility rate is falling, it doesn't fall continuously along a nice line and then approach a level and stabilize; there are fluctuations throughout the period. These fluctuations may, in fact—not only in the case of financing social security but for a wide, broader range of economic institutions—be more significant in the problems that we encounter economically than in the actual seemingly large differences between two fertility rates.

For example, fertility swings that give small cohorts of children one year and large cohorts the next, then back to small, can put significant strains on the educational physical plan. By the same token, with relatively large cohorts of the elderly one year and small cohorts the next—by year, I would say period to period—there may be unused and idle capacity in particular health care facilities.

So because of the fact, as was pointed out earlier, that a composition of demand—the age-specific composition of demand differs—fluctuates around a particular fertility rate, it may have considerable economic consequences even as, in the cases we're examining today, which assumed constant fertility rates.

Mr. GEPHARDT. So you're saying that the fluctuation experience or levels create economic problems unto themselves regardless of how you look at the overall long-term swing area?

Dr. CLARK. That's correct. If there is a stable population, it could be that it is stationary in numbers. You could have the same size population, but with a fluctuating age structure as the fertility rate fluctuated around the replacement level, and that may well be the more likely occurrence than a constant, over a prolonged period of time, 2.1 births per woman year after year after year.

Mr. **Gephardt**. Thank you, Mr. Chairman. I'm sorry to have taken up so much time.

Mr. **Stockman**. That's OK. I think we want to move on to Dr. Butler, but I'm tempted to just add one more element here. What I think I'm trying to encourage is that the actuaries be more imaginative in terms of the possible range of alternatives presented to us.

Now, one that I've never heard of and I'm sure has not been done, but ought to be considered is what would happen after 1995 if we had a major guest worker policy in this country? Now, nobody would think of it. We have high unemployment and more people than we can employ. This has a lot to do with the demographic situation, absorbing the baby boom and so forth.

However, when you start to look at the 1990's and you see the rate of labor force entry the situation is totally different. What would happen in a period from 1990 to 2030, for instance, if we had 4 or 5 million a year guest workers in the labor force paying payroll taxes? Has anybody ever done a projection on that?

Mr. **Smith**. I don't know that we've done this type of analysis, Mr. Stockman, but it's quite obvious from the data that I laid out earlier that one of the controllable elements here is either immigration or, as you mentioned, the guest worker policy as used in certain European countries. Those are both elements which have to be taken into account.

Our economists and our actuaries are both aware that that's a possibility. Until there is some change in the immigration policies and the quotas of this country, we can't use it in our projections, although we can do it for analytical purposes.

Mr. **Stockman**. That's what I mean, for analytical purposes, not for your central projection, but as an option to consider, even with the prevailing climate.

Mr. **Smith**. Right.

Mr. **Stockman**. The problem is unemployment and too many workers, but obviously, if you're talking about 75-year projections and policy options and so forth, the climate may change radically by the 1990's.

Mr. **Smith**. That's quite right.

Mr. **Stockman**. Thank you. Let us proceed to Dr. Butler. I'm sorry that we've kept you waiting for so long.

STATEMENT OF DR. ROBERT N. BUTLER, DIRECTOR, NATIONAL INSTITUTE ON AGING, ACCOMPANIED BY DR. JACOB BRODY, ASSOCIATE DIRECTOR OF EPIDEMIOLOGY, DEMOGRAPHY, AND BIOMETRY, NATIONAL INSTITUTE ON AGING

[Prepared Statement in Appendix on p. 722.]

Dr. **Butler**. Mr. Stockman and Mr. Gephardt, I'm very pleased to be here. I hope that we, of the relatively new Institute on Aging, can contribute to this very important discussion.

I'd like to intoduce on my left, Dr. Jacob Brody, the Associate Director of Epidemiology, Demography, and Biometry of our Institute.

Most of my remarks will, of course, ultimately turn to research, health, prevention, and epidemiology. As you know, this century has been marked by considerable triumph in the reductions of maternal, childhood, and infant mortality, which have contributed to the survivorship and the increase in the older population. We have begun to speak of three generations, and even multigeneration families, while at the time of the founding of our Republic, less than 4 percent of Americans lived within a three-generation family.

In the year 1900, there were about 3 million Americans over 65. Today, there are roughly 23 million. This means that one in nine Americans are age 65 or older, with the expectation that in 50 years, this rate will become one in six.

By the year 2030, the U.S. Census Bureau estimates that the over-65 population will peak at 52 million. Although the overall size of the population will increase, population projections reflect our past history in their distribution of people. The percentage of elderly will barely decline by 1 percent between 1990 and 2020, reflecting the lower birth rate during the depression and World War II, and then will rise steeply as the post-World War II "baby boom" cohorts grow old. I have provided figures to convey this information.

But figures alone cannot really convey the impact which the graying of American has had and will continue to have on society. Yet, they do illustrate the magnitude and urgency of the issues related to the health and well-being of our older population. The establishment of the National Institute on Aging as a part of the National Institutes of Health was in part stimulated by congressional prescience in this matter.

The National Institute on Aging's broad mandate allows us to study all aspects of the aging process, with the ultimate goal of enhancing the quality of life through the application of research discoveries. This includes the social and behavioral sciences, as well as the traditional biomedical disciplines, because the problems of the aged are not only disease-related, but also economic and psychosocial in nature.

We already know why there has been an increase in the numbers of persons over 65. Our aging population, as I said, is the result of a combination of factors, such as decreased infant and maternal mortality, major advances in the treatment and prevention of infectious diseases, and remarkable declines in the incidence of cardiovascular and cerebrovascular diseases, both of which are leading causes of death in the elderly.

The Institute's epidemiology, biometry, and demography branch is in part designed to answer questions about the elderly, such as: who they are; where they are; and what are their special health needs and problems.

The population over 65 is not homogeneous. By far the fastest growing group are those over 75. In 1900, there were 900,000 people over 75; today, there are 9 million—and this is the group that has the most remarkable social and health cost impact.

Of these, more than 2 million, most of whom are women, are age 85 or older. It is this group which faces the greatest social and health burden. About 1 in 5 of the 85-plus group are residents of institutions, as compared to 1 in 20 for the 65-plus population as a whole. In general, at any one time, 95 percent of the elderly are living in the community, while only 5 percent are in any type of institutional care. Only 20 percent of all elderly ever have any nursing home experience, and for many that may be very brief—just prior to death.

In addition to the increasingly rapid growth of this portion of the population, the cost of health is rising at an even more staggering rate. Fifty-six cents out of every Federal health dollar—a total of about $18 billion in 1976—was spent through medicaid and medicare on health care for the elderly. Between 1974 and 1976, health care expenditures on the elderly rose by $10.7 billion, 72 percent of which came from public funds. The judicious application of new knowledge acquired through research potentially can do much to improve existing services and health care.

Without new knowledge, we will continue to do the same things in the same way, while our health costs continue to soar. Imaginative thinking about new ways to prevent disease and disability, to support the family, and to develop better systems of self-help and self-care may help us contain these spiraling costs.

Although demographic trends show a tremendous growth in life expectancy—especially the proportion of the population beyond age 80—this has been predominantly experienced by whites and women. Although women enjoy a longer life expectancy than men, they are thus more susceptible to multiple health and social problems.

Today, one of every three females born will reach the age of 85, but fewer than one of every six males will attain that age. This is further complicated because women tend to marry men 3 years their senior, and thus are subject to an average of 11 years of widowhood.

Differential life expectancy is evident among races as well as between sexes, and represents one of the Institute's major research priorities. The study of the health-related effects of grief, bereavement, and living longer than one's contemporaries are also areas of importance, which greatly affect the quality of life of our elders.

Certainly the participation of the elderly in the labor force is an important factor in terms of health and well-being. According to the U.S. Labor Department, many people over 65 continue to work, despite the decline in the average age of retirement. In 1976, almost 4 million people over 65—that is, 17 percent of the elderly—remained in the labor force. There were, however, important differences among those older workers, particularly in regard to their marital status. It appears that labor force participation may be a matter of economic necessity, in spite of social security and Government support programs for the elderly.

Knowing who the elderly are is of critical importance in our health care and social welfare systems. In order to place services where they are most needed, we need to know where they live or where they move. That Miami Beach may be mecca for fleeing New Yorkers is obvious, but until recently, no comprehensive studies have been done on the migration patterns of the elderly.

Let me conclude by emphasizing that research provides the most promising mechanism to control spiraling health costs. Perhaps I can give one example. There are about 200,000 hip fractures annually in the United States at this time. They cost at least $10,000 in care for each case—that's over $2 billion spent altogether only for hip fractures. If we began to understand better the mechanisms, such as the softening of bones that occurs with age, particularly in women and particularly in the post-menopausal period—we would do much—not so much in extending the length of life, but improving the quality of life, and also reducing staggering costs associated with such problems as fractures and resulting complications.

The NIA is currently carrying out extensive studies in clinical and basic sciences, such as metabolism, endocrinology, pharmacology, biochemistry, nutrition, and prevention to better understand the declines in body functions which occur with age, why these differ among individuals, and the methods best suited to control these declines.

It seems likely that, with the fruit of current research, the elderly Americans of the year 2030—those who, in fact, are alive and aging today—will be healthier and more active. Each day there is a net increase of some 1,400 elderly, as 5,000 Americans join the ranks of the over-65 group and 3,600 people over 65 die.

It is crucial that we consider who the elderly are, where they are, and their special problems in shaping future health policy. Hearings such as these offer us the opportunity to interact with Congress for the benefit of elderly citizens.

Mr. **Gephardt**. I wanted to get to the retirement issue, if I could, that's been touched upon by a number of you.

It seems to me that there are a number of factors that go into making a decision—a social decision—about retirement. Obviously, the kind of life that people who are of older years live is one of the factors that has to be looked at; the economic consequences of any decision that's made have to be looked at; the viability of a social pension system has to be looked at.

In looking at all of these factors, I guess I'd like to know which is the most important one that we should look at. Which factor has to be looked at above the others, or do they all have to be put in an equal status?

Dr. **Clark**. As I mentioned earlier, there are now a number of studies by economists looking at the issue of retirement. That's the particular field I'm most familiar with. I assume that there are others in sociological and psychological areas.

What the studies are finding is the following: that health is a very significant factor in determining when an older person retires or withdraws from the labor force. They are also finding that the level of social security benefits is a very important factor, in other words, the income that a person can receive if he does withdraw from the labor force.

The same would hold for coverage by private pensions. So if one is trying to decide whether to retire, and if one disregards or holds constant health status, then the level of income that that person has—and I would think in a relative sense, compared to his preretirement income—is one of the most significant variables determining retirement.

In many cases, this individual cannot just choose to accept that benefit, because it is tied to some work restrictions, such as the earnings test or retirement from a job in order to receive the pension payment.

A third factor—not an independent factor—is that there is considerable interaction between health and the availability of retirement benefits. That is, people who have health problems are more responsive to the availability of income in retirement than people who do not have health problems.

So there are two primary factors that have been found to be most significant in recent studies of retirement: first, health status of the individual; and second, the availability of retirement income, whether it be from social security or private pension. A third factor would be that there is a considerable interaction between those two dominant influences on the retirement decision.

Mr. **Gephardt**. Let me ask you this: Congress this year passed the mandatory retirement age law which makes it unlawful for an employer to discharge someone because of age until they reach age 70. We have not made many changes, only some minor changes in the Social Security Act in 1977 regarding the retirement age question. We, as I remember, created a minor disincentive to opt for the 62 age retirement, and tried to give an incentive, even though a minor one, to wait until 65.

Some will argue that we have a number of disincentives in the system for later retirement. We have, obviously, the generous benefits; we have a provision for early retirement at age 62 with no penalty, we have the earnings limitation situation.

I guess my question is: after an analysis of the entire question on the age of eligibility for social security and the mandatory retirement age, should we as policymakers be making decisions on this matter at the same time, rather than setting the age limit for one and not the other?

Dr. **Clark**. Yes, sir, I firmly agree with you, and I think that what we need is a comprehensive view of the total Federal position in terms of rules, regulations, policies, and programs, as it affects the individual decision toward retirement. You mentioned some of the problems: one, to go further and discuss preferential tax treatment for private pensions; you could talk about the double exemption at age 65 and any age-related benefit program.

The availability of those programs is going to play a role in an individual's decision to withdraw from or to remain in the labor force. I certainly would think that, before going piecemeal and changing one part, we need to know what the entire policy is—or if there currently is a retirement policy.

As I tried to argue earlier, it's certain that of increasing importance in the future will be the need for a definite retirement policy that would include and encompass all the policies and programs we've been discussing. Perhaps we should also consider the effect of a change in any of those particular parts of that puzzle on the labor force participation of older workers.

Mr. **Gephardt**. That's all part of the entire question and the reason that the Retirement Policy Commission, which Mr. Smith mentioned, will be looking at the entire retirement question. I hope its scope is wide enough to look at all of the questions that have been presented today, because I think that analysis is absolutely necessary for Congress to make a policy that's not, at best, haphazard. I think it is haphazard today, because we have been looking at each of these questions in isolation and as a good or a bad political idea at any one point in time, without any good sense of how it fits into the total picture.

Let me ask one more question with regard to retirement. I think that one of you made the comment that we should have a look at a gradual increase in the social security retirement age. I want to ask anyone who wants to respond if you really think that it would be possible today to begin making such decisions, even on a gradual basis, or should we wait.

If these demographic factors are so difficult to predict, would we not be better served to wait until a later time and then make some decisions with regard to upping that age, or is it important that we do it very quickly?

Dr. CLARK. I think it's very important that the policy begin to be discussed, and I think it's also important that it be legislated ahead of time for this to be gradually done. I think part of the resistance to a change of that nature would come if you voted today to start raising it next year.

I think that if you're going to raise the age of retirement, you're changing the rules of the game under which people save for retirement, and they need a lead time in which to revise their expectations and their planning horizons. If you're going to start in 1990, I certainly would argue that 1980 is none too soon to put that into effect.

Mr. GEPHARDT. If we pass legislation now based on demographic changes which won't take effect for another 30 years, do we run the risk of the kind of unforeseen changes that we talked about that occurred in the 1970's, which could mean continual tinkering with the system before we really know how we should change it?

I guess I'm saying—that's a significant change, a most profound change in your whole attitude about retirement and about the social security system. By making it today, we have to light on some assumptions, and if those are radically wrong, the tinkering that might go on might be very counterproductive. I guess the flip side is that if you just decide not to act because you don't know enough and you're not sure enough, then the kind of legislative changes you might need to make later would be even more counterproductive. I guess that's your answer.

Dr. CLARK. It seems to me that the least desirable thing would be to have to raise the retirement age quickly in response to impending very large immediate tax increases that were facing the public. I think if you came to a point and said, "Next year we're going to raise the retirement age from 65 to 66, and in the next, it's going to 67"—it seems to me that that is the least desirable alternative.

If one begins to do it well in advance and if you see that the projections are off—and my guess is that 2.1 is probably going to be optimistic over the short term; that the fertility rate is below that and will remain below it for some period—then you can slow down the process of the rate of increase.

Instead of it being raised 3 months every year, you could go to 3 months every 2 years and slow it down. That would be one way to respond to assumptions that are not coming to fruition.

Mr. Gephardt. Let me say to you that it's politically interesting to me today that there are two absolutely contradictory schools of thought which are in full operation. I guess it's always the case that we want it all ways.

We've got a group of people who obviously want people to have the ability to work and be as productive as long as they possibly can, and in fact, they want government policies that would encourage that trend. We have another school of thought, which I guess is much more operational than the first one, that is lowering the retirement age so that people are pushed out of the work force faster and have long retirement times, so that people can have lots of leisure time in their retirement.

It seems that somewhere along the line, we've got to make a decision on what we want for all of the reasons that are involved. But it's interesting to note that these two schools of thought are in full operation.

Mr. Smith. Mr. Gephardt, if I may, I'd like to just repair to the standard raised by Dr. Clark by saying that I think it's terribly important that it be an active subject of public discussion today.

I agree that if we're going to make changes—at least if we take into account the way the social security system has evolved and other pension systems have evolved—we have to give people some reasonable notice for their own retirement planning. So it is important that we get some lead time on actually bringing about changes in the retirement age.

However, I would say that you don't have to make the decision today or tomorrow, but as Dr. Clark said, it may not be too many years before you have to make those decisions.

Actually, the 1975 Advisory Council of the Social Security Administration considered a proposal for increasing the retirement age gradually, starting in 2005 and ending in 2023. It would essentially provide for full retirement benefits at age 68, with reduced benefits available at 65, rather than at 62. Congressman Archer has a bill in which he would also increase the age to 68, but he would begin the adjustment in 1990 and would end it in 2001.

Now, both of these proposals would have a considerable effect on the long-term actuarial deficit of social security. The proposal considered by the 1975 Advisory Council would cut the long-term deficit in half, for example.

Mr. Gephardt. From 1.40 to——

Mr. Smith. To 0.70. Now, it seems to me that the other thing that has to be said about this is, as you point out, there are different parts of the population and, for a variety of reasons, some wish to retire earlier and some wish to retire later. Our data is similar to the data discussed by Dr. Clark, in that people who retire earlier cite that poor health is the reason for retiring earlier.

So if you wish to devise a system which takes into account that some people may want to or need to retire earlier and some may want to or need to retire later, it seems to me that it's appropriate to go back and look at this question of incentives. Do we wish to enrich, for example, the delayed retirement credits, which is one thing that was worked on as part of the 1977 amendments and which would encourage people to stay in the labor force longer, but which wouldn't necessarily require it?

It seems to me that there is a variety of options that can be canvassed around this question of the retirement age.

Dr. **Butler**. I'd like to pick up from the very correct observation that Dr. Clark made of the retirement decision bearing the variables of both health and economic factors. I don't think we've given, perhaps, adequate consideration to the complexities involved in health.

For instance, we've had a potentially major change in retirement and work practices with the passage of the Pepper bill this year, ending retirement in the Federal sector and moving it up to 70 in the private sector. In truth, we don't know enough about what could be called functional retirement; that is, the science base out of which one can assess performance abilities which are going to vary and how these are related to aging and efficiency on the job.

A great many people simply are not going to be able to continue to work; such as those people who have lung disease from working in a mine. We need also to consider differing needs of skills: exemplified by a traffic controller in an airport or a surgeon. Many of the elderly who would be able to continue to work, and would wish to, might be healthier and in more service-oriented occupations and positions than people who work in foundries and factories.

We need to have much more effective techniques for measuring health and functional performance, so we can truly have a choice and truly have a flexible system to measure functional capacity. I'm not sure we've given enough attention to that fact. The population over 65 is not homogeneous and health may be, in many cases, related to perceptions by the individual of his "healthiness" regardless of his chronological age or physiological changes.

Mr. **Gephardt**. Thank you, Mr. Chairman.

Mr. **Stockman**. Dr. Butler, I would like you to focus in a little more detail and a little more depth on the question of mortality. Specifically, what I want to ask is: Is there any probability that we will have some real wild cards coming up in mortality trends or some large discontinuity in the next 30 or 40 years?

Now I want to give you a reason why I think we ought to consider that, and I'd like to know what your general feelings are and what conclusions you would draw.

If we could break mortality down into pre-65 and post-65, we could look at some things that happen to people in their years prior to 65, and we might say that, because of all the wonderful strides that we've made in the 1970's. We now have an Occupational Safety and Health Administration which is starting to enforce, very stringently, standards regarding occupational health, emissions of potentially carcinogenic substances or other things that people have been exposed to in the labor force over the years that are affecting the mortality rate today. However, as a result of these efforts, and other efforts to lower accident rates, and to control air pollution and water pollution, we may make significant advances over the next 30 to 40 years.

In other words, we're making a concerted effort to substantially reduce the environmental exposure of people to death-causing or illness-causing elements in the environment. That's No. 1.

Another factor is progress on infant mortality. Infant mortality has dropped considerably, but there's still room for substantial improvement relative to what other countries are doing and relative to what is now happening to neonatal care and so forth in the high technology hospitals.

A third factor is, we're going to have a drastic labor force shift. Look at what the labor force was exposed to from 1930 to 1960. For instance, in 1940, someone entering the labor force had only a 1 out of 10 chance of getting a safe job for life working for the government where he would not have to bear too much wear and tear and so forth. However, his chances were very high that he'd be out on a farm or down in a deep coal mine or in a steel factory or hauling around stuff in auto plants and so forth.

Today his chances are 1 in 3 of getting a safe job working for government or in some other white collar occupation.

Well, the point I'm making here is that the industrial age is phasing out in this country. The industrial work of the future, in 20 or 30 years, is going to be done in the developing nations. The United States will be unable to compete in terms of cost of labor and so forth. We will be a high technology, service-oriented economy. There may be some very direct correlates between that labor force structure, composition of economic activity, and the things that bear on mortality during the pre-65 age period.

Then, the other half of the equation is the post-65 age period. There, the questions that need to be answered concern the probabilities of major technological or biomedical science breakthroughs. For instance, what would happen to life expectancy if some major breakthrough occurred and it was possible to substantially reverse the normal cardiac deterioration process, or if a cure for cancer were found? After all, we're spending hundreds of millions of tax dollars a year to see whether we can find some Salk vaccine or some cure of that sort.

Now, is there anything in that whole net of possibilities that could lead one to make a case that, over a 40-, 50-, or 60-year period or generation period, there could be a major discontinuity or wild card in the mortality scene?

Dr. BUTLER. I think you're quite right to bring it up. It occurs to me that we need to have as solid a health actuarial base, you might say, as we wish for in the social security base.

Let me try to pick up on a number of your questions. There's a distinction, as I'm sure you know, between lifespan and life expectancy, and what we've had in this century is an increase in life expectancy. More and more people in each cohort born are surviving to age 65 and age 80. We have not had—and as far as we know in recorded history, there has never been—any change in the inherent longevity of human beings. That is, lifespan itself has never been extended, and there's nothing on the horizon at the monent, other than some wishfulness, to make us think that there will be a great breakthrough in molecular biology or genetic programing that will lead to a massive lifespan extension.

Now, if there were life expectancy extensions through major breakthroughs in cancer or heart disease, there are some predictions that are available to us. For instance, with respect to elimination of cancer, there would be roughly 3.4 to 3.8 years' extension of life; then if heart disease mortality—that means all circulatory disturbances—were reduced, additional life expectancy at birth would be 10.2 years.

However, that fails to take into account that if you could eliminate one disease or set of diseases, mortality would be replaced by other diseases. Therefore, you would not actually enjoy that amount of increased life expectancy, even if you were to have total conquest of circulatory disturbances and cancer.

Another important point in connection with your question relates to our comparisons with other nations.

We're still 18th insofar as life expectancy among men, and 10th among women. In some measure, this is a function of inadequacies of health care and problems of appropriate maternal and infant care at birth, particularly among our disadvantaged minority group populations, and that we hope will be subject to change.

Every prediction that I'm aware of in this century with respect to the actual absolute number and relative proportion of older people has tended to be an underestimate. Just as social security may have its problems with underestimating benefit payout liabilities, so does the health care field. We seem to have been successful enough to have actually reduced mortality more than had been expected, so we do have greater survivorship.

It's true, of course, science progressing as it does, that you can't always be certain. What's been predicted one moment may turn out in a matter of a year or several decades to be quite something else again. Who would have suspected that penicillin would have been discovered by Alexander Fleming just about 1929, which is hardly 50 years ago, with enormous benefits for life expectancy extension?

For me, one of the reasons that seemed to be so important in developing our new institute to have a major focus upon epidemiology, demography, and biometry, was to be able to answer your kind of question in a detailed, specific manner, as best as present-day knowledge permits us, and to coordinate this activity with the National Center of Health Statistics.

Mr. Stockman. Let me pursue it a little further. What is the probability right now of reaching 65, of reaching retirement? Let's just arbitrarily say it starts at 65. What is the probability today for someone born today to reach the retirement pool of age 65?

I want to see how much room we have left for improvement. Obviously it can't be more than 100 percent, unless we get cloning.

Dr. Butler. In other words, for a newborn baby today, what would be——

Mr. Stockman. Yes.

Mr. Bayo. Sixty-nine percent for males——

Mr. Stockman. Sixty-nine for males?

Mr. Bayo. For males, yes, and for females——

Dr. Butler. It would be about 82 percent or something like that.

Mr. Bayo. Eighty-two.

Dr. Butler. That, of course, would mean by 2055. In the year 2055, they would reach 65 and above.

Mr. Stockman. Yes, so there is some substantial room for improvement. Now, what would it have been in 1950, or let's say two or three decades back? I want to see what the rate of increase in probability has been.

Dr. **Butler**. I would be very happy to—it's probably not that—I think a lot of the dramatic changes preceded that. For example, in the year 1920, men actually outlived women and now women substantially outlive men.

But I'd be very happy to see if we can acquire that information and make it available to you.

Mr. **Stockman**. Thank you. I think the staff will have a few questions. I'm going to have to leave now, but I want to thank each member of the panel for your willingness to stay so long and be as patient with us as you have. I've found this an enormously profitable and informative experience, and I'm sure Congressman Gephardt has as well.

I just want again to express our appreciation for your appearing here today.

Dr. **Williams**. Dr. Clark, you mentioned that fluctuations in population growth rates pose a completely different set of problems from those of any long-run constant growth rate.

I know that you have worked on the question of whether the higher proportion of the elderly that we will face in 30 years is going to be offset by a lower proportion of young people. Could you compare the per capita spending on a young dependent versus an old dependent, and have you broken these out into public versus private expenditures?

Second, do you know whether switching from supporting young people to older people will pose any administrative problems for our society? For example, much of the spending on children is financed either privately or at the State and local level, whereas much of the spending on the elderly is financed at the Federal level.

Do you have any recommendations for adjusting our systems of taxes so that the needed revenues will be in the proper places?

Dr. **Clark**. The comment that Mr. Smith made earlier in terms of the total dependency ratio never attaining its 1975 level is true. It is also true that it will eventually be higher than it was in 1977.

What we find is that, as the increasing proportion of the population is over 65 or 75 or whatever measure you want to use, there's a decreasing proportion of the population below age 18. The question then is: is there an offset in these fundings for programs for the young dependent as opposed to programs for the elderly dependent?

What I've tried to do was to look at the major public support programs for the elderly, which of course would include the retirement programs—medicare, medicaid, and other in-kind service programs for the elderly—and calculate an average cost of supporting an elderly dependent and do the same thing for children. With children, the primary costs are the survivors' benefits from social security, AFDC, nutrition programs through school lunch programs and the like, and educational expenditures.

Now, when one makes that type of calculation and takes the aggregate measure of those costs of supporting children and divides by the number of children in the population during the period, say, 1970 through 1975 or 1977—any reference point you want to pick—and does the same thing for the elderly with the programs mentioned, one finds that the public cost of supporting the elderly is about 3 times that of supporting young dependents.

So, as the dependency ratio or the composition of the dependency ratio changes, even if the total stays the same, there are cost implications for governmental expenditures, and that is, they will rise. If children or young dependents cost less to support through public programs than do the elderly, although there is an offset, it's not significant enough to eliminate the projected rise in costs. It does, however, moderate the higher cost for the elderly.

A second point is that the bulk of child expenditures—and that would be educational expenditures—comes at the State and local levels. So, if you're going to talk about offset, you have to talk about where that offset is coming from. For example, the Federal Government will increase its expenditures for supporting the elderly, whereas State and local governments will decrease their expenditures on young dependents.

Now, the likelihood that the States will voluntarily come to the Federal Government and say, "Why don't you take some of my revenue sources" is slim in light of the way things are going in today's current political arena. So, I'm not sure how to answer that question, but I think that's a significant point to raise when someone starts talking about offsets. This is not going to be an easy process, and how it comes about will be a difficult and perhaps painful process.

A related point to that is that if one looks over the past 5- or 10-year history of these programs, there's not an offset to the extent that programs are held at the same expenditure levels. Whether you compare the expenditures on children or the elderly against any measure of per capita income, you see that those expenditures are increasing. If relative costs—a replacement ratio for the elderly and a similar measure for the youths—are held constant, then as one increases in proportion to the population and the other decreases, you'd have an offset that keeps total expenditures as a portion of Federal budget about constant.

In fact, over the last 10-year period, both of those costs increased, so it may be inappropriate to talk about an offset for that reason as well.

Thus, there are three factors that I would like to emphasize. One is the State and local expenditures as distinct from Federal expenditures; two is what I think is a relatively significant difference in the expenditures on the young versus the expenditures on the old. A third point I haven't discussed would be the mix between public and private costs.

A family may allocate a portion of its income to its child for the child's maintenance in human capital or education, and that is not measured by the estimates I have given. The reason it's not included is that I'm not really sure how to handle it. It seems to me that a family clearly is going to view expenditures on its own children differently from expenditures on the elderly through a tax program.

In addition, it's difficult in an economic sense to describe what is a family expenditure on the child. Is it consumption on the part of the parent or an investment? So, in this particular study that I assume you're referring to, I stick mainly to the public mechanisms, although there are estimates of what it costs to feed and clothe a child that you could include.

To the extent that you do that, then the cost of supporting children rises relative to that of supporting the elderly. For example, if you include the additional cost of a child, using the intermediate BLS projections, you go from a three-to-one expenditure ratio to about a 50 percent greater cost of supporting the elderly than children.

Dr. WILLIAMS. Thank you. Mr. Smith, I wanted to ask how the social security system takes account of the rising labor force participation of women? Does this help or hurt the system?

Furthermore, in making the assumptions about fertility that you've described, do the different fertility assumptions also carry with them changing assumptions about future growth in female labor force participation rates?

Mr. SMITH. In making the projections—as was pointed out earlier, none of these factors operate in a sense in isolation; they're all interrelated with one another, and there is a very explicit set of assumptions made about labor participation rates of both men and women.

I'll ask Mr. Bayo to give us more detail on that.

Mr. BAYO. The cost estimate included in the board of trustees' report projects a significant increase in the labor force participation rate of females. This increase in the labor force participation rate of females will result in a lowering of the relative cost to social security because of the dual-entitlement provision in present law.

Most females who are married are eligible to draw benefits on their husbands' accounts. Their eligibility to draw benefits on their own accounts would, in some instances, not significantly increase the total benefits that they could draw.

Dr. WILLIAMS. So are you saying that women do not get a fair return on their contributions? Is that correct?

Mr. BAYO. If you assume that she already had a right to a wife's benefit, then from that point of view, yes. It would be different if we assume that the benefits on her own account are payable first.

Mr. SMITH. That's a separate set of questions. We don't mind answering that, but——

Dr. WILLIAMS. Yes, well, I don't think we really want to get into them because many committees already have. But I did want to also ask: Are the projections of the labor force tied to the specific fertility assumption that is employed?

Mr. BAYO. It is influenced, but there is no direct connection that has been established per se. Fertility is assumed to increase—a relatively small increase from the 1.8 children that we are experiencing now to 2.1. The question is how much effect that will have in the projected 75 years.

I think all the other factors overwhelm the effect of the number of children in a family.

Dr. WILLIAMS. I have one final question for Dr. Brody. Could you tell us how your branch, which studies epidemiology, biometry, and demography, coordinates its research with that of the National Institute for Child Health and Human Development.

Dr. Brody. The program is a very new one at the National Institute on Aging, and the very formal mechanisms for coordination have not been developed. The two institutes are aware that they are representing noncategorical subjects and cover the entire age span.

The way we have informally been proceeding is: The National Institute for Child Health, and Human Development, in terms of at least population and projections, is certainly involved in fertility, mortality, and migration issues for the total population. Obviously, the prolongation of life is a major interest of both. The areas that we are reaching very good working agreements on are in programs involving females.

Menopause is a good breaking point. This is a quite important example in terms of estrogen use. NICHD is interested in the contraceptive pill; NIA is interested in the use of estrogens in postmenopausal women.

In areas such as nutrition, we have a formal way to sit down, the NIA Nutrition Coordinating Committee. In general, we're trying to not duplicate but to fill the population research gaps because our interests largely reside at two ends of the age spectrum.

Dr. Williams. But you would categorize your research as being primarily biomedical and they doing most of the behavioral and social science research? Is that correct?

Dr. Brody. Oh, I hope I didn't say that; no. Child Health and Human Development has really made more of a commitment to the early and formative years, with our programs, including the Gerontology Research Center, being broken off. The National Institute on Aging was part of Child Health and Human Development, and was legislatively separated and then expanded in the ancillary programs through the intramural program.

We are both deeply involved in psychosocial and behavior research, as well as basic biomedical research, and there is not particularly much overlap in that. The area that I called attention to—in an area such as nutrition, we feel we have to reach to each other, and we will both be doing the psychosocial aspects for our different ends of the age spectrum.

Dr. Williams. Thank you.

Mr. Gephardt. I have no other questions. I would like to add my thanks to the chairman, for your participation, and the length of time you spent with us. All your testimony has been very helpful to us. We appreciate it. Thank you.

[Whereupon, at 1:15 p.m., the hearing was concluded.]

Additional Questions Asked of the Witnesses by the Chairman

Question 1. Effective policy making requires adequate data collection and analysis. In general, do you feel that government agencies have access to sufficient demographic data? Do you think they make good use of these data in policy formation?

Answer by Dr. Robert N. Butler:

The data collected by the U.S. Census Bureau and the National Center for Health Statistics certainly are sufficient in demographic detail for effective policy making. These data are extensive in terms of demographic, health and socioeconomic characteristics and they are amenable to analysis. However, these data have generally not been analyzed in sufficient detail to allow effective policy making to be made based on results of analyses. The major drawback of these data are their cross-sectional nature. That is, they are taken at a point in time and are not longitudinal, with few exceptions.

The few longitudinal studies which are ongoing, that is, the Framingham Study of the National Heart, Lung, and Blood Institute and the Baltimore Longitudinal Study of the National Institute on Aging have provided significant insights into health related changes with age. The Social Security Administration also has an ongoing longitudinal study concerning retirement. The National Institute on Aging is currently conducting an inventory of longitudinal studies and assessing the value of these studies for research in aging.

There is no doubt that the large amount of quantitative data currently collected by the Government statistical agencies could be more effectively disseminated and analyzed in the various university and private research centers around the country as well as continue to be analyzed by Government agencies to insure greater input for effective policymaking.

Answer by Mr. Robert N. Derzon:

The question of whether we have adequate demographic data must be viewed both in terms of the cost of collecting the data and the burden which would be placed upon the individuals providing the data. In that light, I view our present demographic data as adequate, sufficient and well used for purposes of policy formulation.

Answer by Dr. Robert L. Clark:

Data requirements for sophisticated technical analysis for economic and social issues can be enormous. Although I am not employed by a government agency, it appears that most of the relevant offices have access to much of the required demographic data. These data are frequently employed in policy analysis by these staffs. The most difficult aspect of incorporating demographic trends into long-run policy evaluation is the assumption of the most appropriate fertility rate. In addition, it would be useful to indicate the likelihood of fluctuations around a particular fertility assumption.

Answer by Mr. Elmer W. Smith:

In one sense I think it might be said that there is never sufficient demographic (and other) data on which to base policy decisions. For example, there are limitations on the availability of data relating to disability incidence in the country. Development and analysis of data takes time and societal and political changes have a way of generating "new" data needs "overnight." And it is only natural for policymakers to stress their needs for the most—and the latest—possible data on which to base their decisions.

All of this notwithstanding, there are nevertheless very good sources of demographic data both inside and outside the Social Security Administration, and the data are used extensively in policymaking. SSA's Office of the Actuary and Office of Research and Statistics compile and analyze data which are for Executive Branch and congressional policymakers in evaluating the program and proposed changes in it.

Moreover, in most areas we have the capacity and knowledge necessary to respond rapidly to newly perceived needs for data not currently available and to move to generate that data. In this connection, I might also note that the Social Security Administration provides data not only for social security policymakers, but also to other Government agencies—Federal, State, and local—academia, the private sector, and the general public.

Question 2. The social security system has set an example for long-range planning by making 75-year projections which try to account for likely demographic and economic changes. Would such projections for other programs be useful, or would they lead to useless paperwork?

Answer by Dr. Robert A. Clark:

The Social Security Administration does an excellent job of outlining alternative assumptions that determine future coverage and costs of this program. It would be most desirable if all programs that provided age-specific benefits would incorporate anticipated demographic changes into a comprehensive asessment of future costs.

Answer by Mr. Robert A. Derzon:

Program costs for Part A of the Medicare program are projected 25 years into the future for purposes of setting payroll tax rates and for the annual report of the Board of Trustees of the program.

Part B of Medicare program costs and the Medicaid costs are normally projected five years for budgetary purposes. For the immediate future, inflation in the medical care sector is a far more important consideration than demographic changes in determining costs. However, there is some merit in looking into the future and, periodically, 75 year projections of both part A and part B Medicare programs are prepared for illustrative purposes.

Answer by Mr. Elmer W. Smith:

First, a cautionary note about the 75-year projections for the social security cash benefits program: While the long-range estimates provide a helpful indication of the trend and range of experience, they cannot be regarded as predictions of actual future experience. Moreover, to maximize their usefulness the projections must be reassessed periodically in light of emerging experience and to reflect changes in our understanding and interpretation of the behavior of demographic and economic factors.

The usefulness of long-range projections in setting financing provisions of a program, of course, depends in large measure on the nature of the program. There is a question, for example, how useful projections for the "black lung" benefits program (now largely within the jurisdiction of the Department of Labor) beyond the 5-year period covered in the Federal Budget would be. Long-range costs will depend in large part on future incidence of diseases which are—at least in part—preventable. Other significant variables that would be very problematic to estimate are the extent to which the Nation will increase its dependence on coal as a source of energy and the potential for technological advances in the coal industry.

On the other hand, if reasonable bases for medium range (25 year) estimates for public assistance programs (both present and proposed) could be developed, such projections might well prove useful. Of course, given the States' role in the administration of AFDC and State-to-State program variations, meaningful projections may not be possible.

In general, I think it would be desirable if ways could be found to make reliable medium-range (if not long-range) projections for other programs. The American people ought to know—or at least be able to find out from the government—how much government programs are going to cost in the future if they continue. And it is reasonable to assume that the public would expect public policymakers to take this into account in determining what government programs should be established and which should be continued.

Additional Questions Asked of Mr. Robert A. Derzon by the Chairman

Question 1. The proportion of the very old and the proportion female is expected to rise within the elderly population. What data do you have on differential health care costs for the various age and sex groups *within the elderly population*? In addition to hospital costs by age and sex, can you supply us with information about expenditures on physician's services, nursing homes, appliances, pharmaceuticals, etc? Are there significant differences in frequency of admission to hospitals, length of stay, and cost per day, by age and sex within the elderly population?

Answer. See attached charts.

INCURRED REIMBURSEMENT PER CAPITA UNDER THE MEDICARE PROGRAM FOR CALENDAR YEAR 1977

Sex and age	HI hospital	SMI all services
Male		
65-69	$497	$215
70-74	613	251
75-79	702	287
80-84	797	311
85 +	909	323
Female		
65-69	424	192
70-74	474	215
75-79	635	251
80-85	741	275
85 +	753	299
Average	580	239

HOSPITAL AND SKILLED NURSING FACILITY UTILIZATION UNDER THE MEDICARE PROGRAM FOR CALENDAR YEARS 1972-1977

[Based on Sample Data]

	Admissions per capita		Days of care per capita		Length of stay	
Sex and Age	Hospital	Skilled nursing facility	Hospital	Skilled nursing facility	Hospital	Skilled nursing facility
Male						
65-69	0.31	0.00	3.08	0.13	10.0	25.5
70-74	0.37	0.01	3.97	0.31	10.9	25.1
75-79	0.44	0.02	4.99	0.49	11.3	23.8
80-84	0.44	0.03	5.38	0.63	12.2	22.6
85 +	0.51	0.04	6.11	0.99	11.9	22.2
Female						
65-69	0.25	0.01	2.75	0.23	10.9	29.2
70-74	0.31	0.01	3.54	0.31	11.3	25.8
75-79	0.37	0.02	4.40	0.58	11.9	26.6
80-84	0.40	0.04	4.99	0.94	12.5	25.1
85 +	0.32	0.04	4.21	1.18	12.8	28.2
Average	0.34	0.02	3.89	0.45	11.4	25.7

Question 2. During the hearing Mr. Stockman requested a "business-as-usual" projection of health care costs for the next 25 years. Can you supply us with that information please?

Answer. The 1978 report of the Board of Trustees of the Hospital Insurance program presents three projections of the Hospital Insurance program for 25 years. The alternate III projection is labelled pessimistic. It is pessimistic in the sense that it assumes that the inflation rates that have prevailed in the hospital sector of the past 10 years will continue indefinitely into the future. Under those assumptions, a tax rate of approximately 7 percent will be required to support the Hospital Insurance program by the year 2000.

ADDITIONAL QUESTIONS ASKED OF MR. ELMER W. SMITH BY THE CHAIRMAN

Question 1. What effect do you think the elimination of mandatory retirement would have on the social system?

Answer. As you know, the Age Discrimination in Employment Act Amendments of 1978, enacted April 6, 1978, raise the permissible mandatory retirement age for most non-Federal workers from 65 to 70 and eliminate the mandatory age-70 retirement age for most Federal civilian employees. The legislation also directs the Department of Labor to study the feasibility of eliminating any upper age limit for non-Federal employees and to submit an interim report by January 1, 1981 and a final report by January 1, 1982.

This change in the mandatory retirement age is expected to affect the social security program in the future since more workers can be expected to work beyond the age of 65. If these workers' earnings are above the social security retirement test exempt amount ($4500 for 1979 and higher in subsequent years), they will not begin to collect their full social security benefits until such time as they decide to retire or their earnings fall below the exempt amount. As a result of the later retirements, long-range costs under the program are expected to decrease by 0.08 percent of taxable payroll—even though some delayed retirement credits are provided under the law for workers who postpone retirement.

A proposal to completely eliminate any upper age limit for mandatory retirement would not result in any additional long-range saving to the social security program over and above that produced by the recent legislation. This is because, under the 1977 Social Security Amendments, the age at which the retirement test no longer applies was lowered from 72 to 70, effective after 1981. Thus, since full social security retirement benefits will be payable after 1981 at age 70 regardless of work activity, workers will receive no advantage—in terms of social security benefits—by delaying retirement past 70.

Question 2. Can you explain why the assumptions about female labor force participation in the social security projections are so much higher than the official ones of the Bureau of Labor Statistics? How sensitive is the projected deficit to the assumptions about female labor force participation?

Answer. In December 1976 the Bureau of Labor Statistics (BLS) published projections of female labor force participation rates which provided values by 5-year age groups to the year 1990. The 1978 Reports of the Social Security Board of Trustees presented 75-year cost projections that are based on projections of the female labor force participation rates prepared by the actuarial staff of the Social Security Administration (SSA) which are generally higher than BLS's projections. The table below compares the two projections for the calendar year 1990.

COMPARISON OF PROJECTED LABOR FORCE PARTICIPATION RATES IN CALENDAR YEAR 1990

[By percent]

Age	Projection	
	BLS	SSA
16-19	55.3	57.0
20-24	75.3	74.0
25-29	67.6	72.5
30-34	59.7	70.5
35-39	63.3	71.0
40-44	62.8	70.0
45-49	60.7	67.0
50-54	60.3	60.0
55-59	51.0	52.0
60-64	33.7	34.0
65-69	14.2	16.0
70 and over	4.4	4.0
Total	52.0	55.2

It will be noted from the above table that significant differences occur mostly at the prime working ages 25–49. The age-adjusted total figures show that overall the SSA projections are about 6 percent relatively higher in 1990 than the BLS projections. These differences are due principally to the fact that SSA are later projections and reflect the accelerated increase in actual rates experienced in calendar years 1976–77 and to the different assumptions used in the preparation of the projections. BLS projections were assumed to reach a level of zero growth by the year 1995, but SSA projections were not assumed to reach ultimate levels until the year 2010. The BLS projections are based on extrapolations of the rates experienced in the past, but SSA projections also incorporate assumptions about continued shifting lifestyles which will allow more females to enter and to remain in the labor force.

Regarding sensitivity of the OASDI 75-year long-range cost projection to assumptions in the female labor force participation rates it is estimated that for every one percent relative increase in the ultimate rates the OASDI cost would decrease by about one-fourth of one percent relatively.

Question 3. Life expectancy has increased almost two years in the last decade alone. Yet the social security projections imply only a two to three year increase in life expectancy over the next seven decades. Why do you expect that advances in life expectancy will slow down so much? How do you take account of new advances coming out of the biomedical field in making your projections?

Answer. Life expectancy at birth, as may be observed from the table below, increased significantly during the 1940's and 1950's. This was mainly due to improvements in the control of infective and communicative diseases. Relatively small improvements were recorded during the 1960's, but in the mid-1970's there were large decreases in mortality. Our latest projections assume that over the next seven decades there will be further decreases in mortality amounting to about 15 percent for males and about 25 percent for females. Most of these decreases would be due to improvements in cardio-vascular-renal diseases since these are the current major causes of deaths. It should be recognized, however, that they represent to a large extent degenerative diseases which will not be easy to control.

ACTUAL AND PROJECTED LIFE EXPECTANCY AT BIRTH AND PROBABILITY OF SURVIVAL TO AGE 65

Year	Life expectancy at birth in years		Probability of survival from birth to age 65	
	Male	Female	Male	Female
Actual				
1940	61.60	65.89	558	655
1950	65.47	70.96	616	741
1960	66.80	73.24	642	785
1970	67.04	74.64	643	797
Projected				
1977	69.39	76.76	679	816
2000	70.30	78.04	696	832
2025	71.08	79.28	710	846
2050	71.65	80.40	720	857

In addition, it should be recognized that life expectancy is a measure of survival rather than a measure of mortality and that as mortality decreases larger percentage decreases in mortality result in smaller percentage increases in life expectancy at birth.

Finally, in our projections we have incorporated our belief that the fast improvements in mortality recorded in the mid-1970's are rather extraordinary and should not be assumed to continue at that rate into the future.

Question 4. The mortality projections of the social security system assume that the life expectancy of women will continue to increase faster than that of men. Why shouldn't we expect the gap to narrow rather than widen, as women adopt male life styles more (e.g., smoking, executive stress)?

Answer. We are projecting a faster improvement in mortality for females than for males over the next seven decades (25 percent decrease vs. 15 percent decrease). This results in a widening of the gap in life expectancy at birth between males and females. Our analysis of the trends demonstrate that female mortality continues to decrease faster than male mortality. This faster improvement in female mortality has been occurring while the difference in life styles between males and females have been narrowing. Consequently, we believe that it is more reasonable to assume that as the narrowing of the difference in lifestyles continues in the future the gap in life expectancy will nonetheless continue to widen.

Question 5. How would the cost of the Social Security program change if we used a CPI-indexed approach rather than the wage-indexed one in present law?

Answer. Under the wage-indexed system in present law, the following formula for computing a worker's benefit based on his Average Indexed Monthly Earnings (AIME) goes into effect in 1979:

90 percent of the first $180 of AIME, plus 32 percent of AIME between $180 and $1,085, plus 15 percent of AIME in excess of $1,085.

Under this system a worker's AIME is calculated by averaging his annual earnings, after first adjusting those earnings for increases that have occurred in the general level of wages between the year the worker incurred those earnings and the second year prior to eligibility (1977), the latest year for which data are available. For later years this formula is updated by adjusting the dollar amounts to reflect changes in the general level of wages.

Under the CPI-indexed system designed for this comparison, the following 1979 formula has been developed:

96 percent of the first $165 of AIME, plus 35 percent of AIME between $165 and $985, plus 17 percent of AIME over $985.

Under this system a worker's AIME would be calculated similarly to the wage-indexed AIME, but with earnings adjusted for CPI changes rather than for changes in the general level of wages. This formula has been designed so as to produce benefits which match those estimated for 1979 under the present-law system. For later years this formula would be updated by adjusting the dollar amounts to reflect CPI changes.

Table 1 shows a comparison of the benefit payments estimated through 1988 under the two systems. From that table we can see that the short-range effect of changing to a CPI-indexed system would be minor. Consequently, the additional tax income provided by the 1977 Amendments would still be necessary to insure adequate financing of the program in the near future.

Table 2 shows a comparison of the projected costs of the OASDI program under the two systems over the next 75 years or so. From that table we can see that the cost of the program would be considerably lower under the CPI-indexed system than under present law. However, it is not reasonable to conclude that the program would in practice experience such lower cost in the future. The reason for this is that under the CPI-indexed system the replacement ratio—that is, the ratio of the benefit amount payable to a worker for his first year of retirement to his gross earnings in the year prior to retirement—would steadily decline to values so low that future action would be necessary to increase benefits on an *ad hoc* basis if the system were to continue to provide a reasonable adequate floor of protection for future retirees. Hence it is inappropriate to anticipate that the program would actually experience long-term reduced costs of the magnitude implied by the difference of the projected costs in Table 2. We have included Table 3 to show a comparison of the replacement ratios under the two systems and to illustrate the low levels that would be reached under a CPI-indexed system, as compared with the relatively constant values maintained under present law.

In addition, we have included Tables 4 and 5 to show a comparison of the sensitivity of the projected OASDI costs to assumptions regarding increases in the CPI and in real wages—that is, in wages after adjustment for inflation—under the two systems. Table 4 shows that the costs projected under both systems show only minor sensitivity to changes in the rate of change in the CPI, with those projected under the CPI-indexed system showing less sensitivity than those under present law. Since the CPI-indexed system is designed so as to reflect changes in the CPI, this latter result is not surprising.

Table 5, however, shows that the costs projected under the present-law system are significantly less sensitive to changes in the rate of change in real wages than are those under the CPI-indexed system.

TABLE 1.—COMPARISON OF THE PROJECTED OASDI BENEFIT PAYMENTS UNDER THE PRESENT LAW WAGE-INDEXED SYSTEM AND A CPI-INDEXED SYSTEM

[In billions]

Calendar year	Benefit payments: Present law wage-indexed system	Benefit payments: CPI indexed system	Benefit payments: Reduction from present law
1978	$93.9	$93.9	
1979	104.8	104.8	(1)
1980	116.1	116.1	(1)
1981	127.8	127.8	(1)
1982	140.2	140.0	$0.2
1983	152.6	152.1	0.5
1984	165.3	164.4	0.9
1985	178.2	176.6	1.6
1986	191.7	189.1	2.5
1987	206.0	202.2	3.7
1988	221.1	215.9	5.2

[1] Less than $50 million.

TABLE 2—COMPARISON OF THE PROJECTED COST OF THE OLD-AGE, SURVIVORS, AND DISABILITY INSURANCE (OASDI) SYSTEM UNDER THE PRESENT LAW WAGE-INDEXED SYSTEM AND A CPI-INDEXED SYSTEM, CALENDAR YEARS 1978–2055

[In percent of taxable payroll]

Calendar year	Present law wage-indexed system	CPI-indexed system	Change from present law
1978	10.94	10.94	0
1979	10.45	10.45	0
1980	10.34	10.34	0
1985	10.31	10.22	−.09
1990	10.58	9.99	−.59
1995	10.90	9.75	−1.15
2000	11.02	9.31	−1.71
2005	11.32	9.05	−2.27
2010	12.08	9.19	−2.89
2015	13.30	9.68	−3.62
2020	14.74	10.31	−4.43
2025	16.06	10.80	−5.26
2030	16.73	10.85	−5.88
2035	16.80	10.51	−6.29
2040	16.49	9.97	−6.52
2045	16.28	9.51	−6.77
2050	16.26	9.19	−7.07
2055	16.29	8.91	−7.38
25-yr averages:			
1978–2002	10.64	9.94	−.70
2003–2027	13.51	9.82	−3.69
2028–2052	16.50	10.00	−6.50
75-yr average:			
1978–2052	13.55	9.92	−3.63

TABLE 3—COMPARISON OF ILLUSTRATIVE REPLACEMENT RATIOS FOR MALE RETIRED WORKERS AT SELECTED EARNINGS LEVELS UNDER THE PRESENT LAW WAGE-INDEXED SYSTEM AND A SELECTED CPI-INDEXED SYSTEM, CALENDAR YEARS 1978–2055

Calendar year	Benefit system and earnings level					
	Present law wage-indexed			CPI-indexed		
	Low	Average	Maximum	Low	Average	Maximum
1978	63	47	35	63	47	35
1979	63	48	35	63	48	35
1980	63	48	30	63	48	30
1985	54	41	23	54	42	23
1990	55	41	24	51	40	22
1995	55	42	25	47	37	21
2000	55	42	26	45	36	21
2005	55	42	27	44	34	21
2010	55	42	27	42	33	21
2015	55	42	28	41	31	21
2020	55	42	28	40	30	20
2025	55	42	28	39	28	20
2030	55	42	28	38	27	19
2035	55	42	28	37	26	19
2040	55	42	28	37	25	18
2045	55	42	28	36	24	18
2050	55	42	28	34	23	18
2055	55	42	28	33	22	17

Note.—The low earnings level is defined to be $4,600 in 1977 with earnings in other years adjusted according to the trend in the average wage in covered employment; the average earnings level is defined as four times the average first-quarter wage in covered employment in each year; the maximum earnings level is defined as the maximum earnings taxable under the social security program in each year. It is assumed that the worker retires at age 65 at the beginning of the year.

TABLE 4—COMPARISON OF THE SENSITIVITY OF THE PROJECTED COST OF THE OASDI SYSTEM TO CHANGES IN CPI ASSUMPTIONS UNDER THE PRESENT LAW WAGE-INDEXED SYSTEM AND A CPI-INDEXED SYSTEM

[In percent of taxable payroll]

System and calendar years	Projected average cost based on ultimate wage-CPI increases of—		
	3¾—2	5¾—4	7¾—6
Present law wage-indexed:			
1978-2002	10.85	10.64	10.44
2003-2027	13.99	13.51	13.09
2028-2052	17.18	16.50	15.88
1978-2052	14.01	13.55	13.14
CPI-indexed:			
1978-2002	10.13	9.95	9.78
2003-2027	10.12	9.82	9.56
2028-2052	10.34	10.00	9.71
1978-2052	10.20	9.92	9.68

TABLE 5—COMPARISON OF THE SENSITIVITY OF THE PROJECTED COST OF THE OASDI SYSTEM TO CHANGES IN REAL-WAGE ASSUMPTIONS UNDER THE PRESENT LAW WAGE-INDEXED SYSTEM AND A CPI-INDEXED SYSTEM

[In percent of taxable payroll]

System and calendar years	Projected average cost based on ultimate wage-CPI increases of—		
	5—4	5¾—4	6½—4
Present law wage-indexed:			
1978-2002	11.13	10.64	10.19
2003-2027	14.51	13.51	12.62
2028-2052	17.77	16.50	15.35
1978-2052	14.47	13.55	12.72
CPI-indexed:			
1978-2002	10.64	9.95	9.33
2003-2027	12.02	9.82	8.07
2028-2052	13.30	10.00	7.63
1978-2052	11.99	9.92	8.34

Question 6. Do you have any information on whether guest workers in other countries pay social security taxes and receive benefits?

Answer. Generally, countries who import "guest workers" from another country require these workers to pay social security taxes. The duration of the guest workers' stay is generally too short to enable them to qualify for social security benefits in the host country. However, the workers' protection is assured by many countries, particularly those in Europe, through totalization agreements between the host country and the country of origin. Other countries, such as those in Asia and Africa that were colonized by the English, have established provident funds to which employees and employers contribute equally; upon disablement or retirement, an employee is entitled to all the contributions plus interest. Usually, these plans permit an employee to withdraw the funds if he leaves the country permanently. While some African countries have totalization agreements, there are no totalization agreements among Asian or Middle Eastern countries. There are, however, a few totalization agreements between Middle Eastern and European countries, such as between Iran and West Germany.

Totalization agreements prevent the impairment of social security protection which results when a person works during his lifetime under the social security systems of two countries but is not eligible for benefits on the basis of his work in one or both of the countries when he retires, becomes disabled, or dies. Under a totalization agreement, eligibility and the amount of benefits payable by each country generally take into account a worker's work and earnings in both countries.

For example, under a totalization agreement between two countries, each country, at the option of a social security claimant, considers the worker's total earnings record—i.e., his covered work in both countries—in determining insured status and benefit amounts. Thus, covered work in either country could count toward meeting the insured status requirements of the other. In computing a benefit, a participating country would first compute the theoretical benefit that would be payable under its laws if the total earnings record were covered by its social security program. The benefit actually paid would be a fraction of the theoretical benefit amount equal to the proportion of the worker's covered employment in the country paying the benefits to the total employment covered under the systems of both countries.

As you may know, the Social Security Amendments of 1977 have enabled the United States to enter into bilateral totalization agreements with other countries. No agreement can go into effect until it has been submitted to Congress and 90 days have elapsed in which both Houses of Congress have been in session. The United States has already signed totalization agreements with Italy and West Germany and is pursuing discussions with Switzerland and Canada. A number of other countries have expressed interest in concluding totalization agreements with the United States.

ADDITIONAL QUESTIONS ASKED OF DR. ROBERT N. BUTLER BY THE CHAIRMAN

Question 1. Do you have any information about the implication of demographic change within the elderly population (e.g. a rising proportion female, and very old) on health care costs?

Answer. We should begin by clearly distinguishing between health care costs and social costs associated with aging. The majority of those over 65 are in good health and only about 5 percent are in nursing homes and similar institutions. Unless we separate the costs of health care from the costs of social support, transfer payments such as Social Security, and welfare, a true comparison of health costs over time and among nations cannot be done meaningfully. The components of social and health costs of aging and disease must be analyzed in order for cost-effective policies to be formulated and carried out with respect to the impacts of aging on health care costs.

Together, nursing homes and hospitals account for 2 of every 3 dollars in health care cost. Given the increased incidence of major diseases with age, we can expect the hospitalization of older people to increase as the population ages, and with this increased hospitalization, cost will increase. In 1970 hospital care cost $25.8 billion. In 1976 personal hospital care cost $55.4 billion. Less than 10 percent of this amount was from direct payment. Fifty-five percent of the cost of hospital care was paid for by the Government. Of the $30.4 billion spent for personal health care for persons over 65 years of age in 1975, almost two-thirds was from public sources, with 90 percent of the health care hospital cost coming from public sources.

The information we have on costs from the National Center for Health Statistics (NCHS) indicates that the aging population, especially the rising proportion female and growing proportion over 75, will increase the cost of medical care associated with nursing homes. For instance, between 1973-74 and 1977 the number of nursing home residents increased from almost 1.1 million to about 1.3 million. The average monthly charge for residents of nursing homes during this period increased from $479 a month to $699 a month, an increase of $190 a month in less than 4 years. In 1977, 70 percent of the nursing home population was over 75 years old and 71 percent, or over 900,000 of these residents, were female. Between 1973-74 and 1977 there was an increase of about 100,000 residents of nursing homes in the 75 and over age group. This represents an increase of almost 2,000 per month over the period. This data from NCHS on nursing homes also shows that as the population ages, i.e., the older the population in the nursing home, the more likely they are to require special aid, special assistance, and in general are most cost intensive. Thus, as the population ages, especially as women experience greater longevity, we could expect the cost of medical care, especially that in nursing homes, to increase.

To illustrate this contrast more vividly, the per capita expenditures for people under 65 years of age in 1975 was $375. For persons 65 and over the per capita expenditures for personal health services were $1,360, about four times greater than the under 65 years old age group. In summary the implication of a rising proportion of females and very old within the elderly population will probably result in an increase in the health care cost because of rising absolute numbers of females and of those over 75 who require greater hospital care and nursing home care and for whom the largest share of the bills are paid for by the Federal Government. Research is needed to distinguish those health services which could be provided at lower cost in an alternative manner to the current methods using hospitals and nursing homes, while maintaining services in those institutions which they are able to provide in a more cost effective manner for the elderly.

Question 2. Many older people fear that an increase in life expectancy does not mean a healthier life, but rather an increase in the amount of time they spend sick.

Life expectancy at age 65 has increased by about one year in the last decade. Can this additional year be broken down into: days spent in hospitals? Days spent sick at home or in a nursing home? and healthy days?

Answer. The increase in life expectancy is a statistical phenomena which indicates that a larger proportion of the population is living longer. Fifty percent of the men now reaching age 65 can now expect to live at least to age 78. Fifty percent of the women now reaching age 65 can expect to be alive after the age 83. There is no realistic way which these additional days of life can be broken down into days spent in the hospital or days spent sick at home or in a nursing home and healthy days since this is a statistical phenomena relating to the population as a whole; the most that could be done is to take age specific incidence by year of age and artificially create these days. However, most of the data which we have are by 5 or 10 year age groups so that this information would be very difficult to generate and would probably be unreliable for these purposes. We do have plans in the coming year to begin a research project on the "last days of life" which will look at some of the basic relationships between the individual, his last days of life, and his living or confinement relationships. From this study we may be able to answer some of the questions which we need in this respect to determine the distribution of time spent in various settings in the last year of life.

The older population appears to be composed of a substantial majority in good health until death and a relatively small group who are chronically ill and who spend a large proportion of their later life institutionalized. In the five percent of the elderly in nursing homes are many who spend their last days there as well as those who have previously been institutionalized. In 1976, one fourth of nursing home "discharges" were deceased, and over half of the 1976 nursing home residents had resided in another health facility just prior to admission. This phenomenon, the progress from healthy status to death and its variations in the population, needs to be more thoroughly studied because of its significance to health care policy.

Question 3. Life expectancy has increased by about two years in the last decade alone. The Social Security Administration projects that over the next seven decades it will increase by about two to three years. Would you concur with this projection? If so, why will the advances in life expectancy not continue at recent rates?

Answer. The changes in life expectancy which have occurred over the last decade have primarily been due to two phenomena. The decrease in infant and maternal mortality and, in more recent years, the decrease in the major causes of death among the older population, particularly heart disease. The projections made by the Social Security Administration and the Census Bureau are based on several assumptions concerning mortality rates and fertility rates as well as migration. We would expect some continued decrease in the major causes of age specific death at ages below 75 particularly, if for no other reason than the increased survival of those who contract disease; this survival is related to better prevention, treatment, and early diagnosis of disease. However, it is doubtful that the major declines which occurred in maternal and infant mortality will continue at the previous rate. Also, the projections probably inadequately reflect the immigration, especially the illegal immigration, of certain minority groups whose longevity is not as great as the majority of the American population. This would have a tendency to reduce the projected increases in longevity or life expectancy. Thus, the statistical mean life expectancy probably will not continue to increase at as great a rate as it has in the recent past, but it can be expected to reflect the better social conditions, e.g., increased education and income and shift toward non-manufacturing, service oriented occupations, which suggest a continued decrease in age specific death rates overall.

The relationship of socioeconomic conditions and mortality rates is well established, but has not been used to project population survival rates taking into account shifting economic and social conditions *per se*. This needs to be undertaken in order to put more realistic bounds on the projections carried out by those concerned with the future population distribution and policies related to that distribution.

Question 4. Do you think that future advances in life expectancy will:—increase health care costs by requiring the use of high technology diagnostic and treatment methods?—or reduce health care costs through use of better preventive methods?

Answer. Increases in life expectancy will probably result in an increased health care cost because a greater number of individuals in the older age groups will be surviving and in their later years of life will be subject to chronic diseases and institutionalization. Even if costs per age group were to remain constant, which they probably will not do because of inflation and higher cost technologies being developed, the future health costs would increase as a result of the larger numbers surviving to older ages. To reduce health care cost would require alternatives to hospitalization and institutionalization for the older population. Included among these alternatives might be care at home through visiting nurse programs and similar means of treating the elderly and their chronic diseases without requiring hospitalization or institutionalization. This would appear unlikely to make a large impact at present, given the current framework under which medical costs are reimbursable. That is, it is much easier to be reimbursed for a hospitalization or an institutionalization than it is to be reimbursed for health care costs incurred at home. Of course, preventive methods could be effective in controlling the cost of accidents and acute diseases which affect the elderly. Overall, however, it is doubtful that the health care cost rises which have occurred over the last decade will be substantially reduced on either per capita or a total basis without significant changes in the methods and requirements under current policies whereby reimbursement of costs of medical care or health care are made. Most of all, however, is the importance of new knowledge which would prevent the occurrence of costly diseases and/or provide prompt, effective means of treatment and cure.

Question 5. Could you elaborate on Dr. Brody's comments in the testimony about coordination between NIA and the Center for Population Research in NICHHD, concerning research on aging?

Answer. The Center for Population Research is exclusively an Extramural Program dealing with the determinants and consequences of population change. Their funding is primarily in the general areas of fertility, mortality, and migration. The National Institute on Aging has both Extramural and Intermural Programs. The demography or population research is carried on both through the social science portions of the Extramural Program and through the epidemiology, demography, and biometry program within the Institute on Aging. The NIA program is particularly interested in the size and rates of change of the elderly, the socioeconomic, and demographic correlates of changes in disease incidence and mortality rates, and in future trends in the composition of the elderly population, whereas the Center for Population Research of NICHD funds, through its Extramural Program studies which deal with all age groups, with concentration on the child-bearing and child-rearing years, but not exclusively confined to those years. The Gerontological Research Center, as well as many of the personnel in the Extramural Program of NIA, were formerly part of NICHD. Therefore, we maintain many informal contracts with the Center for Population Research though there is no formal arrangement with them concerning research on aging.

Question 6. Could you discuss priorities for data on the elderly population. In particular, could you discuss the importance of: -data broken down by 5-year or 10-year age groups within the elderly population, such as for health-care expenditures. In view of the problems of age reporting for the elderly, could such data for narrow age groups be useful and reliable? -longitudinal surveys -health examination surveys directed explicitly at the elderly.

Answer. The data currently published by the majority of federal agencies, if not all, are extremely inadequate in terms of five and ten year age groups beyond age 65, especially in regard to health care expenditures, socioeconomic conditions, and demographic composition. Even though there are questions as to the reliability of such age reporting for some segments of the population and especially at the upper age groups, this data would be extremely useful. It is imperative that these breakdowns, at least by ten year age groups and preferably by five year age groups, be incorporated into current planning of tabular presentations as soon as possible. Although the data in the past have suffered in reliability that reliability will no doubt increase with time. But given the tendency of institutions and agencies to maintain their current reporting system, changes must be made at the present in order for the more reliable data which is likely to be gathered in the future to be reported in the more detailed age category. Also, it is much more difficult to judge the reliability and to take steps to improve reliability of the data for the older age groups if it is never reported, but simply maintained within the specific agencies and not released. The cause of significant increases in mortality rates by age, in use of long term facilities by age, and in other health care related measurements which all tend to increase with age, particularly at ages 75 and above 85 years of age, could be more readily studied if provided. The reliability of the data which is now questionable in many instances could in greater age detail be increased by oversampling of the upper age groups. In fact, the National Institute on Aging is discussing with the National Center for Health Statistics the increased representation of the elderly on their two major population surveys, the Health Interview Survey (HIS) and the Health and Nutrition Examination Survey (HANES). Currently HANES does not include the population over age 75, yet this is the major source of information on variations in nutrition and in standard health and anthropometric measures in the general public. Thus, by excluding the population over 75 years of age, we are prevented from learning the normal range of health and nutrition status of 8.5 million Americans who are probably the most important group in terms of health care costs. Such data must be made available for research and policy making as soon as possible.

Question 7. Can you comment on how living arrangements and family status affect the nutrition of the elderly.

Answer. We do not have information on the elderly classified by living arrangements or family status and nutrition. We do have some information on self-assessed weight status in the Health Interview Survey. There are 6.5 million people over age 65 who consider themselves overweight, 4.5 million of whom are women. Fifty-five percent of these women are trying to lose weight. Among the elderly who assess their weight status, only 12 percent of the men and 10 percent of the women consider themselves underweight; 61 percent of the men and 51 percent of the women consider their weight about right. While these figures do not necessarily indicated the nutritional status of these populations, they do suggest that these groups of elderly do consider themselves to be getting, in most cases, an adequate diet. One note of caution is due, however, because in the 6.5 million who consider themselves overweight, 54 percent are trying to lose weight and only 32 percent of these are doing so on a physican's advice. There is obvious danger to those who are trying to lose weight without the advice of the physician of suffering from short term malnutrition and its consequences if the method of losing weight is a drastic reduction in food and nutrition intake. It is unfortunate that this data is not broken down and analyzed by the living arrangements or family status of the elderly population.

The relationship of nutrition and weight, especially obesity, clearly needs to be determined. From the HANES survey, we do have information on the elderly population under 75 and their nutrition, but this information also is not categorized by living arrangements or family status. It is published by income below or above poverty level. For males below the poverty level, the mean nutrient intake of calories is only 70 percent of the standard, while it is 75 percent of the standard for those over the poverty level. Males over 65 have a mean protein intake 91 percent of the standard if they are below the poverty level and 102 percent of the standard for protein if they are above the poverty level. Similarly, the Vitamin A standard is reached by those males above the poverty level of income, but is only 73 percent of the standard for those males over 65 below the poverty level. For all other nutrients identified in HANES, the male population, whether above or below the poverty income level, exceeds the standard based on body weight for age, sex, and height.

For females the results are similar. Females over age 65 below the poverty level have a mean nutrient intake of calories which is only 71 percent of the standard; for those above the poverty level, the mean nutrient intake of calories is 78 percent of the standard. For protein those women over 65 below the poverty level have a mean nutrient intake 84 percent of the standard, while those above the income poverty level have a mean nutrient intake of protein which is 92 percent of the standard. Women over 65 whether below or above the poverty level have a mean nutrient intake which is below the standard also for calcium, for iron, and for Vitamin A. For those over 65, whether male or female, black or white, or whether above or below the income poverty level, the mean caloric intake is above 1,000 calories a day. Caloric intake tends to be lower in women over 65 than in men over 65 and lower in blacks regardless of sex than in whites.

In summary, from the HANES data it does not appear that there are signs of significant malnutrition among these populations of elderly. Of course, without further information on the distribution around the mean figures which were cited in the HANES study, we cannot be positive as to the degree of malnutrition which may exist among the elderly. Certainly there are segments of the elderly population for which such programs—Meals on Wheels and other food delivery programs—are essential for the nutrition as well as the continued socialization of the elderly. The impact of these programs should not be considered minimal, but rather should be considered in the overall context of both the nutritional and social value of these programs for that segment of the elderly population which they serve. Obviously much more information is needed in this area, especially for those over age 75.

Question 8. Can you tell us how the probability of reaching age 65 has improved for both men and women over time.

Answer. The U.S. Bureau of the Census in their Special Studies Series P-23, No. 59, has provided figures on the portion surviving, that is, the probability of reaching age 65 for males and females from 1900–1974. At the turn of the century only 39 percent of the white males reached age 65. Of those another 31 percent survived to age 80. In 1950, 64 percent of the white males who were born reached age 65 and 38 percent of those who reached 65 lived to be age 80 or more. In 1974, almost 69 percent of those white males who were born can expect to survive to age 65 and another 40 percent of those who reach 65 will live to be age 80 or beyond. The proportion surviving among white females is much higher. In 1900, 44 percent of the white females who were born lived to be 65 years of age. Of those reaching 65, 35 percent lived to be at least 80 years of age. In 1950, 77 percent of the white females who were born live to be 65 years of age; of those, almost 50 percent live to be 80 or beyond. By 1974, 73 percent of the white females survive from birth to age 65, and of those surviving to age 65, 61 percent live beyond the age 80.

The figures for the non-white races are quite revealing with respect to proportion surviving. In 1900, 19 percent of the non-white males who were born could expect to live to age 65. Of those living to age 65, one fourth could expect to live to age 80 or beyond. In contrast, 22 percent of the non-white females who were born in 1900 could expect to live to age 65 and 30 percent who reached 65 could expect to live beyond age 80. In 1950, 45 percent of the non-white males who were born could expect to live to age 65, and 37 percent of these could expect to live beyond age 80. For non-white females in 1950, 52 percent who were born could expect to live to age 65. Of those reaching 65 years of age, 45 percent could expect to live beyond age 80. In 1974, for non-white males who were born 53 percent could expect to live to age 65. Of these, 37 percent could expect to reach age 80. For the non-white females in 1974, 70 percent of those born could expect to survive to age 65. Of those survivors, 52 percent could expect to reach age 80 or beyond.

As these figures demonstrate, the chances of survival have traditionally been much higher for women than for men, and have been much higher for whites than for non-whites in the U.S. Nonetheless, a significant proportion of all race-sex groups do live to reach age 65 and an additional large percentage continue to live to age 80 and beyond. In terms of health costs, since the increase in incidence of chronic diseases and the increase in mortality with age are well known, we must plan accordingly for the health care of this increasing absolute number of elderly and this increasing proportion of our total population. The social constraints which have in some ways hampered the harnessing of creative talents and continued particiaption of the elderly in society must evolve so that the elderly continue to make their positive contribution to society and are not artificially prohibited from doing so simply based on age. Research must be directed toward these social issues as well as toward the biomedical aspects of aging if we are to have effective, consistent policies regarding the older members of society.

ADDITIONAL QUESTIONS ASKED OF DR. ROBERT L. CLARK BY THE CHAIRMAN

Question 1. What effect do you think the elimination of mandatory retirement would have on the Social Security System?

Answer. The elimination of mandatory retirement provisions will prohibit involuntary removal of capable older workers from their jobs. This legislation may also induce firms to more closely examine the productivity of their older workers and in some cases lead to earlier termination of employment. The net effect should be to increase the number of workers over 65 who remain in full-time positions. Delayed withdrawal from the labor force reduces the expenditures and enhances the revenues of the Social Security System, thus moderating the need for higher taxes.

In the short run, the magnitude of additional workers will probably be fairly small—although little effort has been given to an assessment of this effect. Within a longer time frame, I regard this as an important first step toward establishing the proper context for a national retirement policy that does not encourage early retirement.

EFFECT OF THE BABY BOOM AND BUST ON EMPLOYMENT POLICIES

FRIDAY, JUNE 2, 1978

HOUSE OF REPRESENTATIVES,
SELECT COMMITTEE ON POPULATION,
Washington, D.C.

The task force met, pursuant to notice, at 9:45 a.m., in room 2325, Rayburn House Office Building, Hon. James H. Scheuer, chairman, presiding.

Members in attendance: Mr. Stockman, Mr. Scheuer, and Mr. Erlenborn.

Present: Dr. Williams, task force director; Dr. Bouvier, professional consultant; Ms. Parks, special assistant; Dr. Martin, research associate; Ms. Tames, research assistant; Ms. Stolp, research assistant.

Witnesses: Dr. Isabel Sawhill, Dr. Richard Freeman, Dr. Joseph Anderson, and Dr. Julian Simon.

Mr. SCHEUER. The hearing on the effect of the baby boom and bust on economic policies will commence.

Congressman Daniel Akaka of Hawaii, and Congressman Dave Stockman of Michigan, are the co-chairman of this task force.

Congressman Akaka is in Hawaii and Congressman Stockman will be here in another 10 or 15 minutes. Nevertheless, let us begin the proceedings.

Dr. Freeman must leave by 12 o'clock. We should be well along by then. We will begin with Dr. Sawhill.

I hope each of you will take a few minutes to sum up your testimony. If you want to comment on what your colleagues say, please do. Dr. Sawhill, you may proceed.

STATEMENT OF DR. ISABEL SAWHILL, DIRECTOR, NATIONAL COMMISSION FOR MANPOWER POLICY

[Prepared Statement in Appendix on p. 741.]

Dr. SAWHILL. It is very nice to be here and to have the opportunity to testify. For the record, I would like to make the disclaimer that I am here as an individual and my remarks should not be interpreted as representing the official views of the National Commission for Manpower Policy.

Mr. SCHEUER. What are the views of the National Commission for Manpower Policy on the subject matter?

Dr. SAWHILL. I am not sure that the Commission has made specific recommendations on the issues we will be discussing this morning.

Mr. SCHEUER. This is part of the problem, is it not?

Dr. **Sawhill**. I think in the future there will be more attention paid to the issues.

Mr. **Scheuer**. Will you take back a message to the National Commission for Manpower Policy that we are asking all the agencies to get their act together and to start thinking of the future? They must realize that population ebbs and flows. This will affect manpower policy, and this should be reflected in legislation, and in executive branch policies and programs. Congress should have the benefit of the opinions of the National Commission for Manpower Policy. This should be a two-way street.

Dr. **Sawhill**. I appreciate your comments and I will certainly take them back to the Commission.

Let me make a correction in what I said. Although the Commission has not made a set of recommendations about the future of population growth and related issues, it has done a great deal of work in the sense that it has commissioned special studies of these questions.

We have an excellent study which I can send you on demographic change and on employment which was authored by Michael Wachter and Prof. R. A. Gordon, who died the same week that the publication came out, I am sorry to say, but it is an excellent contribution from him.

We have also just released a very lengthy and very informative report on illegal and legal immigration and its impact on the economy.

Mr. **Scheuer**. We would very much like to have those reports.

Dr. **Sawhill**. I will make sure to send these reports, and several others which may be relevant, to you.

Mr. **Scheuer**. That would be very helpful. Please proceed with your testimony.

Dr. **Sawhill**. I am going to focus my remarks on the increased labor force participation of women and some of its implications for the future and for public policy. I think it would not be an exaggeration to say that we are experiencing a revolution in this area, and it is occurring in all western industrialized societies. It really has very profound implications for the future.

The most obvious manifestation clearly is that increased commitment of women to paid work.

I would like to take my few minutes to first review with you a few facts; second, to highlight what I think are the major consequences and; third, to discuss what I think are the key policy implications.

First the facts. In 1950, one-third of all women were in the labor force. Currently the proportion is about one-half. It has already exceeded what the Bureau of Labor Statistics projected for 1980.

Mr. **Scheuer**. About a 50-percent increase in a generation.

Dr. **Sawhill**. It really is phenomenal. Since 1940 the labor force participation of married women has tripled.

Mr. **Scheuer**. Did the participation rate of single women rise 50 percent as well?

Dr. **Sawhill**. Yes.

Mr. **Scheuer**. Could you give us the figure of what the increase has been in the labor force participation rate of women with children under, let us say, 5 or 6?

Dr. Sawhill. It is currently about 37 percent.

Mr. Scheuer. What would that have been 20 or 30 years ago?

Dr. Sawhill. I don't know that off the top of my head. Twelve percent or something like that.

Mr. Scheuer. Right. That would be a tripling. Incredible.

Dr. Sawhill. Suppose we take the female age group 25 to 34, which is mostly younger women with children. In 1970 their participation rate was 45 percent. Eight years later, as of March of this year, it was 61 percent.

Mr. Scheuer. Unbelievable.

Dr. Sawhill. I think this suggests the way in which attitudes are affecting this very youngest group of women.

I would also like to note that women of any age with children under 18 are more likely to be employed than those without. In the past, all of our research suggested that having children was an inhibiting factor to being in the labor force. The overall statistics show that this has flip-flopped now and it is obviously again very much related to changes in attitudes and the fact that it is younger women who are coming into the labor force in droves and, of course, they are more likely to have children.

Mr. Scheuer. What are older women without children doing with their time? Are most of them married?

Dr. Sawhill. Yes; most are married women. They were socialized in an era when the "right thing to do" was to be supportive of one's husband. The rules of the game have changed very rapidly for them and it is a little bit late for them to suddenly adjust to these revolutionary changes. They don't have the same skills and the same orientation to the labor market. So, they are doing the kinds of things that they have always done in the home if they were not working, and a smaller portion of them are working than in the case of younger women with children.

I have written a paper called "Homemakers: An Endangered Species?" in which I focus on this older group of women. I have some concern about their status and what these rapid changes are doing to them.

Now, the next fact I want to point out is that the increased participation rate for women has been accompanied by a decline for men. In 1950 the participation rate for all men was 86 percent. It is now 77 percent.

Mr. Scheuer. Are the rest of them retired or going to school?

Dr. Sawhill. Yes; also, some of them are prime-age males who are not working for one reason or another. Disability is increasing. As you know, this is a somewhat subjective condition and I think we are seeing a looser definition of or different reaction to disability of the men than what we saw in the past. This may have something to do with the fact that there are more earners in the family and more sources of income support, including disability payments.

I think it is possible that we might one day see a convergence of the male and female participation rates. I suspect that is quite far in the future, but I don't think we should ignore the possibility that it may occur and it may even occur more rapidly than we think. Certainly all the history to date has been that these trends are going forward with much more rapidity than anyone ever projected or expected.

Another thing I would like to note is that the increased participation rate of women reflects both a greater tendency for women to seek paid jobs and—I think this is the important part—a much greater tendency for them to remain in the labor force. It is not only that they are coming in, but that they are maintaining their commitment.

Furthermore, women are working on the average more weeks per year than they did in the past. In other words, they are more likely to have a full-time commitment to the labor force.

Let me turn now to some of the major demographic and economic consequences of these trends. The most obvious is the growing prevalence of the two paycheck or multiearner family. Only one-third of all husband-wife families currently consists of a breadwinner husband and a homemaker wife.

If we ask the question, what proportion of all American families consists of a breadwinner husband and a homemaker wife who is responsible for the care of children under 18, then the proportion is only 16 percent. The other 84 percent consists of two earner families, older couples who no longer have minor children in the home, and single-parent families of which there are many.

A second set of consequences has to do with marriage and divorce. We are seeing fewer marriages or, more accurately, much later marriage on the part of young men and women than in the past. We are also seeing more divorce and, in general, more single-parent families.

The data here are again quite dramatic. The proportion of children living with only one parent increased from 12 percent in 1970 to 17 percent in 1975. I should also point out that children in female-headed families run a very high risk of being poor and of requiring some type of income assistance.

You may ask, is this a causal relationship? In other words, has the increased participation of women in the labor force been a direct cause of the later marriage rate, higher divorce rates and more single-parent families? I think the answer is a qualified yes.

My own research suggests there are many factors that are leading to the changes I have cited. But the increased economic independence of women, which has come from their work outside of the home, has been one factor.

A second consequence is lower fertility and smaller families. Again the causation runs in both directions, and there are other factors involved. However, I don't think there is any question that recent trends in fertility are related to the increased participation of women in the labor force. The facts are that they have new options other than motherhood, and that the cost of rearing children is going up, particularly when considering the implicit costs of the foregone earnings of a mother when she stays home for many years. She not only foregoes the immediate income that her work could bring, but also the skill acquisition and career building that, over the long run may increase her earnings.

Mr. SCHEUER. Does that skill acquisition and career building carry any suggestion on the degree to which she is able to cope with being a single mother of a family and to raise her children in a strong and secure home?

In other words, is a home healthier when a woman works or when she is not employed and on welfare? Which offers the best prospects for a good family life?

Dr. **Sawhill.** I don't think we can give a general answer to that question and say categorically one is better than the other. I think it depends very much upon the circumstances in each case. One thing that the research suggests is that the woman's own preferences are important.

If she is at home when she would really prefer to be working, that is not very good for the well-being of the family and for her children. Conversely, if she is in the labor force out of economic necessity and would much prefer to be fulfilling a more traditional role at home, that leads to problems as well.

However, in general the research does not indicate any major effect of women's employment on children. We don't have any evidence on any major adverse effects.

Mr. **Scheuer.** Have there been any systematic, longitudinal studies made of that? Don't you think it is important for us to know that?

Dr. **Sawhill.** Oh, I think it is an extremely important question.

Mr. **Scheuer.** We are spending billions and billions of dollars on manpower programs. Hopefully we will soon be spending more on child care programs. These programs are designed to allow a woman to enter the world of work. Certainly a large part of the question is whether it is good for the child.

One option is for the child to remain at home with the mother, who presumably is not very well skilled and educated. The alternative option is for the mother to work and the child to be in a day care center. Which of those options will produce better results?

I think that is something for us as policymakers and legislators, and also those in the executive branch, to consider.

We ought to have a data base on that.

Dr. **Sawhill.** I think a good bit of research has gone forward on that. One of the difficulties is how you measure outcomes, and as you suggest, you would need longitudinal data.

Mr. **Scheuer.** Another thing you mention is the readiness of the child to learn when he first goes to the schoolhouse door.

Dr. **Sawhill.** You probably know the results of some of the Head Start programs as well as I do. They suggest that being in a Head Start program, which, after all, is a form of developmental day care, provides some good things for children, initially at least. We are not sure those effects have a lasting value, but certainly there is no evidence, on the other hand, that the children are any worse off for having been through that experience. I think, if anything, they are better off.

I have never seen any research that has been able to document in a satisfactory fashion any negative effects for children of mothers being in the labor force generally.

Now, we can go beyond that simple question and say, "Well, under what conditions does it make sense?"

One of the conditions it makes sense under is if the alternative care arrangements are very good—both in the developmental sense of learning academic competencies or preschool types of skills, and in the emotional sense of having a warm substitute environment.

I also think it is important to remember that the tradeoff is often between income and time. For many families that second income is absolutely essential. Although it might be nice if one parent could stay home full time with the child, it may be that the family can't really afford to go without that income.

We talked about the impact of women's employment on fertility and the fact that this is leading to smaller families, and then we moved to the impact on the children themselves. Several other types of consequences of womens' employment, which I don't have time to go into in any detail, should be noted: First, a more urban-oriented society and less geographic mobility than in the past and, second, a more unequal distribution of income. These are somewhat more speculative consequences, but I think that, other things being equal, we would see them occurring.

Let me now touch on what I think the major policy implications of these changes are. One of them we have already touched on. Very broadly I think two problems need to be addressed.

One is the strain which these changes are creating for the economy, and another is the strain which they are creating for the family, to which you have already alluded.

Let me begin with the economy. The major issue here—and I see this very much from my perspective as Director of the Manpower Commission—is, can we create enough jobs to accommodate all those who need or want to work? A kind of subsidiary issue that lies just under the surface here is whether women are taking jobs away from men, particularly minority men, and from teenagers.

My answer would be very simply that we can and we should create enough jobs to accommodate growth in the labor force. There is plenty of work to be done in our society, and it would be a real travesty to ignore the contribution which women can make.

I think the issues here are very similar with respect to older people. We see an emerging debate about increasing the retirement age and whether the economy can absorb the older workers. My answer would be exactly the same as it is in the case of women.

I think there is a short term digestion problem that we should talk about as well as in inflation constraint on job creation, at least in the ways we have always done it. For some economies, and increasingly even for this one, there is a balance-of-payments constraint. I have just come back from a meeting with the English-speaking countries in Australia on employment and training policy. One of the things that I learned from conversations with my colleagues in these other countries is that because they are trade-dependent economies, they don't feel they can expand their economies. Like us, they have increasing numbers of women coming into the labor force. Because of this trade constraint they are seriously considering adopting policies which would discourage married women from working—through the tax system mainly. In some towns in Australia there are actually ordinances which prohibit married women from working. Frankly, I was quite shocked to learn this.

Mr. SCHEUER. That would be unconstitutional in this country.

Dr. Sawhill. I asked if there were not some legal redress for these women, and the answer I got was that they would be socially ostracized if they even raised the question.

Now, the single most important thing that we could do in order to create enough jobs is to find some innovative ways of controlling inflation. I personally think we ought to take a more serious look at tax-based incomes policies. There are problems with these policies but we certainly don't have any better solution. I think experimentation along these lines would be extremely constructive. More voluntary efforts, although entirely worthwhile, may not be sufficient to do the job.

I think that the benefits of finding a way of absorbing all of these extra workers can be substantial. Standards of living will clearly rise and with slowing productivity growth, it may be that in the future we are going to have to improve standards of living more through reductions in the dependency ratio than through increases in individual productivity.

If we have more older workers and if we have more women workers, we may indeed get some reduction in the dependency ratio. Utilizing these workers will lead to higher standards of living as conventionally measured.

Let me say just a few words now about the strains these changes are creating for the family. The $64 question in this area, which we have already touched upon, is who is going to take care of the kids if everybody is out working.

There are various possibilities and I think all of them are likely to occur. One is that there will be fewer children, smaller families. A second is that maybe children won't get the kind of care that they got in the past. I hope that this won't lead to a generation of neglected children, but in spite of what I said a few minutes ago, I think it is critical that we learn more about this.

A third possibility is that we will move toward more institutionalized child care arrangements. You asked me a minute ago about the child under 6 who doesn't have full time care within the home and is in some type of institution. I think we are a little bit the victims of our past history and cultural arrangements here. No one has ever done a scientific study that said at age 6 it is better for children to be in school and under age 6 it is better for them to be at home. It might be age 3; it might be age 1; it might be age 8. We don't have hard evidence on that question, particularly within the range of variation that is realistic in a policy sense.

A fourth possibility and one that I would like to emphasize, is shorter and more flexible hours of work. Again, there is nothing sacrosanct about the 40-hour work week and with more multiple earner families one can maintain family income with each individual working somewhat fewer hours per week.

I think that in a policy sense we have to give attention to these last two possibilities: Institutionalized child care arrangements and shorter and more flexible hours of work. I hope that we don't jump on the bandwagon and adopt the first alternative before we have really looked into the possibility of changing hours of work, because in many ways I think that is the more desirable way to go. It does preserve a more important role for the family in the life of the child. It doesn't necessitate a massive new expenditure of Federal funds, and so for various reasons I think we should give it a great deal of attention.

Thank you. I will stop now.

Mr. **Stockman**. We will suspend for 10 minutes to vote and be right back.

[Recess taken.]

Mr. **Stockman**. We have succeeded in approving the journal of yesterday's proceedings. That is a narcissistic act. So we will move forward.

I want to call on Dr. Simon next but, before we do, I have a couple of questions that I want to address to you, Dr. Sawhill.

I think you touched on a terribly important point, the whole issue of displacement effects and the assumption that there is a fixed supply of jobs in the economy. That is, if you make room for people who are on the outside, you are going to displace somebody who is already in, whether youth, minorities, or older people. That is really a nonsensical economic proposition, I think, because ultimately the level of output in the economy is a function of the input supplied.

Dr. **Sawhill**. Precisely.

Mr. **Stockman**. The more input supplied, the more output you should get if you have capital, commercial transactions and so forth. I think that is obvious, but it does not seem to be understood around here very well. Whenever we get into these questions, the fixed supply assumption seems to prevail.

A good example last year was the youth opportunity wage. That was all fixed job supply. We could not get it in. The same thing starts to happen when you talk about older people working longer.

In the case of women, a dramatic case can be made, and I am wondering if you or somebody who shares your opinion could begin work on a model which would show, in rather concrete terms, the fact that when a woman goes to work that tends to create an additional job demand in the economy.

We have been talking about child care. If she is going to go to work, the chances are that somebody is going to be employed to take care of her children. It probably can be shown that she would have a higher propensity to buy convenience food, or the family might eat out three times a week instead of two. She might have a propensity to purchase more labor-saving devices such as microwave ovens, than she would have before.

Has anybody tried to put a model together which would show the indirect job creation effects of someone moving out of the unmonetized household sector into the market and thereby creating demand for things she is going to monetize? Would that not help people better understand how this process works?

Dr. **Sawhill**. I think in a sense our macroeconomic models do that.

Mr. **Stockman**. Yes, on the macroeconomic level.

Dr. **Sawhill**. The problem is educating people who are not conversant, as most of us are not, with the details of such models. I feel that is badly needed. I do not think it is new modeling that is needed as much as a better way to disseminate that information and to make it understood to the lay public. I would like to work on that.

I was at a conference at Arden House last week that was sponsored by the Work in America Institute. We got into this kind of discussion, and what I have always called the lump of labor fallacy was very much in evidence in the discussions of this group, and this was a group of leaders. Top trade union leaders, some Government people and a sprinkling of academics attended. But, most of the people really did not understand this point. Dr. Bernard Anderson, who was there with me, was appalled at the level of misunderstanding about this. He is testifying either this week or next before the Joint Economic Committee, and I hope he is going to speak out very strongly about this.

I will certainly give more thought to whether there is some new way we can model or talk about these issues in a way that will be somewhat more convincing to the general public.

Mr. **Scheuer**. Wait a minute. Would you elaborate on that?

Dr. **Sawhill**. You may not have been here when Mr. Stockman asked me his initial question, which was: There is an assumption which many people hold that there are a fixed number of jobs in the economy and that if women get the jobs, or older people get the jobs, they will displace other people. What can we do to dispel those nonconstructive ideas which are becoming increasingly prevalent?

One thing that may be needed is better modeling or analytical work. I would like to refer that question to some of the members of the panel here who are into the modeling area. I think they would be much more competent than I to give you some answer on that.

In addition, I think we need better education and more convincing arguments on this front and better dissemination of what the economics profession, I think, accepts almost unanimously. Again I would be interested to see what my colleagues have to say about this.

Mr. **Scheuer**. I remember when President Roosevelt promised that by the end of his term we would have 60 million Americans employed, and everybody laughed uproariously—the Republicans made great fun of it.

Dr. **Sawhill**. You know, up until last year I think the largest increase in employment that we had had in any single year in the postwar period was 2.7 million people. We created 4 million jobs in a single year and everybody said it could not be done, and it was done. I do not think there are a lot of limits on job creation.

All you have to do is look back, not only to the Roosevelt experience and what World War II was able to accomplish, but at the entire transformation of the economy from an agriculturally based to an industrially based economy. All of those people had to be absorbed into the work force. There has been tremendous growth in the population and in the labor force, and we have never had any difficulty providing work for them.

Mr. **Scheuer**. There is almost an infinite number of jobs to be created as the service industry expands.

Dr. **Sawhill**. That is right.

Mr. **Stockman**. The other minor question I want to ask is, in view of your position with the Commission, how much confidence do you have in the statistical agencies of the Federal Government, particularly in their projections?

I have been listening very carefully for a few days now and I am starting to compile a list of disastrously wrong forecasts for a 20-year period.

Yesterday the Social Security Administration people told me in 1946 they had projected the population for 1975 at between 147 and 191 million and it turned out to be 223 million. I note in your paper that in 1970 the Bureau of Labor Statistics projected a labor force participation rate for women for 1980 that was achieved in 1974.

Do you think that in terms of manpower policies, macroeconomic policies, and so forth, that we need a rather large quantum jump in the forecasting activities and precision of the statistical agencies on which we rely to make policy?

Dr. SAWHILL. I think there is room for improvement. I am sure that if these agencies were here to defend themselves, they would point out that they have an insufficient budget and staff for these activities. But I am sure that they would be happy to improve their estimates given the resources to do so.

When I was at the Urban Institute, I was instrumental in getting a research grant from the Department of Labor to improve the projections of the female labor force and I hope that the work that my ex-colleagues at the Urban Institute are doing, will improve the forecasts of the BLS. They are using very simple extrapolation methods with an assumption that there has to be a deceleration of the trend, since the participation rate is obviously not going to go to 100 percent or more than 100 percent. It has to slow up at some point. BLS keeps assuming it is going to decelerate in the near future and it has not decelerated; it has in fact continued to accelerate.

Mr. STOCKMAN. Am I wrong in perceiving a systematic bias or are these just two examples—and I probably could give others—where you have had this large error factor?

Dr. SAWHILL. There have been errors, there is no question about that, but I am only pointing out that it is very difficult to do this kind of forecasting. It takes sophisticated studies and staff time and resources to collect and analyze historical data from which one extrapolates.

I would also say that our statistical systems are better than what you find in many other parts of the world. Although I think this kind of critical self-assessment is very important, we should also give ourselves a little pat on the back.

Mr. STOCKMAN. Yes. Well, I will not carry this any further except to say that we seem to have a tendency to want to fine tune more and more things, and the more you want to fine tune, the better your data have to be. I do not see that our data are solid enough to do that. So maybe we ought to be a little less ambitious.

Dr. SAWHILL. One last comment.

Given the amount of money that we spend on operating programs, it really is too bad that we do not invest a little bit more in information. Even if it happens that in only one case out of 10 the new information leads to much wiser policy, it would clearly be worth it in some cost-benefit sense. The information and analysis are very cheap relative to the cost of running the programs.

Mr. STOCKMAN. Thank you.

Mr. **SCHEUER**. Just to add one footnote, I could not agree with you more, Dr. Sawhill. One of the gripes that this committee has had is that both the executive branch and the Congress are making policies and designing programs from an inadequate data base. You have to look at the whole scheme in order to realize how pervasive this is.

Mr. **STOCKMAN**. Dr. Simon.

STATEMENT OF DR. JULIAN SIMON, PROFESSOR OF ECONOMICS AND BUSINESS ADMINISTRATION, UNIVERSITY OF ILLINOIS

[Prepared Statement in Appendix on p. 805.]

Dr. **SIMON**. Thank you. I appreciate the opportunity to talk with this committee, especially because mine is as yet a minority view, though certainly not a lone voice.

I was delighted by Mr. Stockman's and Dr. Sawhill's remarks about fixity and about limits, because I am convinced that misplaced assumptions about fixity and limits are at the basis of our conventional view of population growth.

In the long run, say 30 or 40 years after a child's birth, population growth and additional people are not bad for the standard of living; that is an observed empirical fact. There is also sound theoretical reason to go further and say that population growth and additional people are beneficial, and to a large extent, in the more developed countries of which the United States is the central element. These assertions are quite at variance with the conventional wisdom, of course.

Before beginning the subject proper, I would like to mention a few basic misconceptions about population growth. One is that even if additional people have a positive effect upon per capita income, this effect would be offset by such negative effects as: Pollution of the environment, shortage of agricultural land due to paving over by cities and highways, shortage of energy, and increased chances of world famine and starvation.

The main basis for these objections is the assertion that the trends and the factors are for the worse than at present. The simple truth, however, is that it is bunk that these trends are toward the worse; rather, the trends in all of these things have been proceeding in positive directions over the relevant past.

Another objection that one sometimes hears is that social disorder and psychological distress would be caused by higher population density in the United States. In fact, there is no evidence for any such negative sociological or psychological effects of population density on balance, as all recent studies have shown.

Now about population proper, and productivity and knowledge, classical economic theory, since the first edition of Malthus, concludes that population growth must reduce the standard of living. The operative mechanism is capital dilution, the so-called law of diminishing returns. Two men cannot use the same tool at the same time, or farm the same piece of land, without reducing the output per worker.

But, the empirical evidence does not confirm this conventional view. The data suggest that in more developed countries, population growth does not hinder economic growth. One piece of historical evidence was the concurrent explosion in Europe of both population and economic development from 1650 onward. The failure of France to excel economically despite its low birth rate in the past 100 years is an important vignette in this history.

Now the more scientific evidence. The statistical evidence is of two kinds. First we have the historical evidence which was collected by Nobel prizewinner Simon Kusnets on population and economic growth over the first half century, and then a whole century, for those countries with available data. Those show no negative effect of population growth on economic growth.

Then we have cross-sectional studies by several researchers relating the rate of population growth to the rate of economic growth in various countries in various periods since World War II. These studies show the same absence of correlation between economic growth and population growth.

These overlapping empirical studies do not show that fast population growth in more developed countries increases per capita income, but they certainly imply that it does not decrease per capita income or economic growth.

The most plausible explanation of the lack of negative influence of population growth on economic growth almost surely is the positive effect of additional people on productivity by creating additional productive knowledge.

I am saying that in the long run the most important impact of population size and growth is the effect of additional people upon the stock of useful knowledge that is employed in the production of goods and services. This positive effect is large enough in the long run to dominate all the negative effects of population growth. That is a strong statement, but the evidence for it seems strong, too.

Let's consider a question: Why is the standard of living so much higher in the United States or Sweden now than in India or Mali, or than in the United States or Sweden 200 years ago? Clearly, the proximate cause is that the average worker in the United States or Sweden now produces much more goods and services per day than does the average worker in India or Mali, or than the average worker in Sweden or the United States did 200 years ago.

The all-important difference between the United States and Sweden now, and India and Mali now, or the United States and Sweden then, is that there is a greater stock of technological knowledge available now, and people are educated to learn and use that knowledge. The knowledge and schooling are intertwined; in India now, unlike the United States 200 years ago, the knowledge is available in books in the library. But without the schooling, the knowledge cannot be adapted to local needs and then put to work. The stock of industrial capital is also intertwined with the stock of knowledge and with education. The value of our stock of capital such as computers and jet airplanes consists largely of the new knowledge that is built into them. And without educated workers, capital equipment cannot be operated and hence would be worthless.

The importance of the technological knowledge factor came out clearly in two famous studies. Both of them found that even after capital and labor are allowed for, much of the economic growth cannot reasonably be explained by any factor other than an improvement in the level of technological practice, including improved organizational methods.

Well, how do population size and growth come into the picture? The source of improvements in productivity is the human mind. The human mind is very seldom found apart from the human body, and because improvements—their invention and their adoption—come from people, it seems reasonable to assume that the amount of improvement depends on the number of people available to use their minds.

Mr. **Scheuer**. We heard testimony last week that children in large families tend to have I.Q.'s lower than children in smaller families. This negative association holds for all social classes.

I wonder how you relate your proposition that with more people there is more human creativity with what we heard Dr. Wray say, that is, that IQ seems to fall for the later children in a large family.

Dr. **Simon**. I have to confess I am not a psychologist. I am not thoroughly conversant with these data. I wish I were, Mr. Scheuer. Nevertheless, two things strike me. First, there seems to be an awful lot of controversy about the nature of these data. Having looked at some of these data in a few of the more general publications, they seem to be amenable to various kinds of interpretation.

Second of all, even those studies which conclude that there is a relationship between birth order or parity and IQ do not tell us how much in any kind of important terms. They may tell us there is a statistical significance between the two, but that might mean that, over the tens of thousands or hundreds of thousands of people in the study, half an IQ point between the seventh child and the first child might be enough to establish what is a publishable statistical significance. However, that might be of no importance in any kind of economic terms.

Mr. **Scheuer**. My recollection was that it was in the range of 10 to 20 IQ points. But, I will check the record.

Dr. **Simon**. Would you, please?

Mr. **Scheuer**. We will inform you, Dr. Simon.

Dr. **Simon**. I would be interested in knowing that; 10 to 20 IQ points is an enormous thing.

Mr. **Scheuer**. It was very significant.

Dr. **Simon**. The averages in the groups I was looking at, in the science article—the famous one of Zajonc and his coauthor—were 102.3 to 101.7. But I repeat that I am not a psychologist.

Mr. **Stockman**. First, I do not think we should necessarily correlate one-for-one IQ with the kind of productivity-enhancing input you are suggesting.

Dr. **Simon**. Wonderful.

Mr. **Stockman**. I read your testimony. You talk about the supermarket clerk who finds a better way to display things on a shelf. That may or may not be a function of IQ.

Second, did not this testimony show that with rising levels of income, real income, IQ's rise as well?

Mr. **Scheuer**. The slope still remains the same.

Mr. **Stockman**. Nevertheless, you have a rising slope. To the extent of your thesis, population creates higher levels of wealth, then you have these two factors offsetting one another. The whole curve is rising even though the slope remains.

Mr. **Scheuer**. Correct.

Dr. **Simon**. Thank you. You said that better than I could have said it, Mr. Stockman. As to the need now for additional producers of knowledge as well as what their effect is, for example, Nobel winner in physics Hans Bethe tells us that the future cost and availability of nuclear power, and hence the future cost or availability of energy generally, would be a rosier prospect if the population of scientific workers in the United States and the more-developed world were larger. If we had more workers, chances are we would have nuclear fusion sooner.

Another example, whereas we develop new materials—plastics and metals—almost every day, it was centuries or thousands of years between the discovery of, say, copper and iron. It makes sense that if there had been a larger population then, the pace of increase in technological practice would have been faster.

Population size and growth have a variety of economic effects, some negative, some positive. If an economist is going to be worth his salt, he has to take account of the size and importance of various effects. He or she has to calculate the net effect of all these forces together. You can only obtain an on-balance overall assessment if you build an integrated model of the economy and then compare the incomes that you would get under various conditions of population growth.

I, therefore, added to a simple neoclassical model another simple fact of the economic growth of nations, which is the increase in productivity due to additional people's inventive and adaptive capacities. Not too surprisingly, I arrived at a very different result than the standard Malthusian model.

I compared several different rates of population growth in the simulation. One of these was zero population growth, another what I call BASE, 1 percent population growth per year; another was a 50 percent jump in the birth rate above BASE in year zero and in subsequent years; another had 2 percent population growth per year.

The most important outcome is that under every set of conditions, the demographic structures with the more rapid population growth come to have higher per-worker income than the BASE structure in less than 80 years. The population growth structure of ZPG holds its advantage over the BASE one-percent structure only about as long as BASE holds its advantage over the faster population-growth structures; thereafter ZPG does much worse.

In many of the runs, the higher fertility structures overtake the BASE rate in per-worker output after only 30 years. That is, only 10 years after the entrance of the first additional children into the labor force the faster population-growth-rate structures do better.

Now it is true that the long run, 30, 50, 80 years, is a long way off. Therefore, it is of less importance to us than is the short run. But we should remember that our long run is going to be somebody else's short run, just as our short run was somebody else's long run.

Babies do not create knowledge and improve productivity while still in their cradles, of course. Although the family bears most of the cost of the children, society has to shell out to bring him or her to adulthood. This means if you do not want to look as far ahead as the next 25 years, the benefit of knowledge from somebody else's babies born today does not interest you. But, if you feel some interest and obligation to the longer-run future, perhaps based on the fact that you yourself today are enjoying the fruits of the expenses that someone paid for 25 or 50 or 100 years ago, then the knowledge that will be produced by today's children will be seen by you to be of great positive benefit to you.

Mr. **Scheuer**. Next Wednesday in California, we are going to have an interesting laboratory test on the kind of decisionmaking you are talking about.

Dr. **Simon**. Why?

Mr. **Scheuer**. Well, that is the famous Proposition 13 where they are talking about a very drastic reduction in the State property tax, most of which goes for education. What people are afraid of is that the older people will say, "To hell with education, it is not going to affect our lives".

Dr. **Simon**. You are saying that this measures our willingness to look forward?

Mr. **Scheuer**. Yes; it is going to tell us a lot about how people identify themselves with other generations.

Mr. **Stockman**. This will tell us whether Keynes was right.

Mr. **Scheuer**. No.

Mr. **Stockman**. In the long run we are all dead if we act on that basis——

Dr. **Simon**. I think some measure of unselfishness should compel us to keep the long-run in mind as we make our decisions about population policy. I analogize here to what the environmentalists are urging on us with respect to our national environment.

I close with a couple of policy recommendations.

First, I recommend that we stop worrying about too rapid a population growth rate in the United States. Helping people obtain the number of children they want, no more and no less, is desirable on general grounds. But, there is no long run macroeconomic warrant for any government population control activities.

My second recommendation is that we increase the rate of immigration, because immigrants are likely to have even lower social costs and higher social benefits of the sort described here than do native-born children.

Mr. **Scheuer**. Would you elaborate on that?

Dr. **Simon**. I was about to thank you for your kind attention.

Mr. **Scheuer**. You can thank us for our attention for the next few minutes.

Dr. **Simon**. That was the subject of a whole paper I gave at the Population Association meetings.

Mr. **Scheuer**. Maybe we should have that .

Mr. **Stockman**. For the record.

[Additional Materials in Appendix with Prepared Statement.]

Dr. **Simon**. I would be happy to. I can summarize.

What I did was to look at the studies I could find for four countries, United States, United Kingdom, Canada, and Israel. I looked at a variety of issues which included—with reference to my last point—the amount of taxes that immigrants pay, and the amount of social services that they use. In all of these cases—most especially, of course, with respect to the illegal immigrants in the United States—the amount of taxes that they pay is likely to vastly exceed the amount of social services that they use.

One important fact, of course, is the age composition of the immigrants. Immigrants everywhere throughout history have always been young, strong, single, without children, and in the prime productive years rather than in the years in which they consume.

Mr. **Scheuer**. Yes; it would be helpful to us if you would send us your study.

Dr. **Simon**. I would be delighted to do that and have it included in the record.

Mr. **Scheuer**. We will print it in the record.

Dr. **Simon**. Thank you.

Mr. **Stockman**. I want to thank you for your testimony, Dr. Simon. I think it is a tremendously helpful antidote to some of what I consider to be the nonsense we are getting these days from Malthusian institutions like the Worldwatch Institute.

I think there is a problem with your presentation. I want to ask you this. I think you mean to say that population growth has a positive effect on per capita income and income growth, all other things being equal.

Let me give you an example or a hypothesis so we can probe that a little bit. Assume that everything is equal about the United States today, its population, natural resources, land area, and so forth, except for two things:

First, there is a 70 percent tax rate on all productive activity, whether it is returns to physical capital, elective capital, or labor.

Second, assume something went wrong at the time of independence and the United States was not formed; instead we now have 50 sovereign nations traversing the continent, each with their own currency, border restraints in terms of tariffs, obstacles to commerce and so forth. Do you think we would have the same level of income in the continental United States that we have today?

This is not a trap.

Dr. **Simon**. The first of the questions, what would happen if we had a 70-percent tax on all kinds of capital?

Mr. **Stockman**. On the return to productive activity.

Dr. **Simon**. All kinds.

Mr. **Stockman**. Yes.

Dr. **Simon**. I confess I would have to take some time to think that one through, Mr. Stockman. It is not the kind of thing that I could answer off the cuff. I have not thought about it. I would prefer to duck that one if I could. If you do not mind, may I think about it for a few minutes and come back to you?

On the second one, what if the United States were 50 separate countries. My family is here with me. We drove from Illinois and just by chance, one of the things we talked about as we drove is what would have happened if in fact the country had seceded into two parts at the time of the Civil War, and what would happen if each of the States of the United States were a separate country. I argued to my wife and kids, as I would argue with you, that I think that although the context then was mostly political, it is not likely to have had any enormous economic effects that would change my conclusions.

This would of course depend upon how many trade barriers there were between each of these States, whether we had a situation where the barriers were as great as they are around Israel with respect to the Arab world, or as small as they are between, say, Monaco and France. If the barriers were small, I do not think it would matter one whit.

Mr. **Stockman**. Let's say substantial impediments to commerce.

Dr. **Simon**. OK. Let's take the tough case of Israel. Israel cannot buy or sell anything from its neighbors. Despite the total barriers that exist, from my experience looking at the Israeli economy and how it developed, I do not think even barriers that great would be large enough to alter the main thrust of the conclusions which I was offering.

To substantiate that conclusion would be a massive job. I am not sure that anyone could do it at this point. But I can tell you I have thought about it; I have looked at some of these cases at least casually, and even in the extreme case of a country that has no commerce whatsoever with its neighbors, it would not be enough to change the conclusion.

Mr. **Scheuer**. Just to put a footnote on that, the pressures are such in that hypothetical situation that even with all the enmities it is not true there is no commerce; there is a fair amount. All you have to do is stand and watch on the Allenby Bridge as the trucks go back and forth. The Israelis manufacture insecticides and the trucks roll them across the border. They stamp in Arabic "Made in Jordan," and distribute them all over the Arab world. Everybody knows that they come from Israel but nobody wants to talk about it, because they need the insecticides and Israel is where they are made. You can replicate that a thouand times.

There is an enormous amount of produce going from the West Bank into Israel. There are workers from the West Bank by the tens of thousands going to Israel for the same kind of jobs that our low-income minority people and the illegal Mexican immigrants fill in this country, particularly in the construction trades.

So behind that facade of total hatred, there is a lot of economic activity going on—which is a lesson in and of itself.

Mr. **Stockman**. I think you have to distinguish between raw population potential and the economic context which allows that to be more or less fully mobilized. If there are all kinds of deterrents to people developing fully their potential capacity for productivity growth because of various kinds of constraints, whether they are tax disincentives or disincentives to commerce specialization of labor, it seems to me that that is an equally important variable. And under the most ideal circumstances, where everyone has a wide opportunity to develop his economic potential to the fullest, there is a market to exchange talent and labor and the wider the market the better. Then you get more overall benefit to society, higher per capita income, and so forth from the population growth.

It seems to me that it would be a pretty hard case to sustain that pure population growth alone is going to do anything for you. Look at India. There is ample raw labor, but they do not have the economic institutions in the marketplace, I happen to believe, that would allow that raw labor potential, raw intellectual potential to be mobilized at the highest level of economic activity. Would you go along with that?

Dr. Simon. Yes; I go along with it. You are quite right.

I think it is important to emphasize that what I am saying here is, all things being equal.

Mr. Stockman. That is where we agree.

Dr. Simon. It is important to mention explicitly some of these things. Perhaps the most important is the one that is inherent in the comparison between India and the United States, that is assuming that the average level of income between the countries is equal and if we compare countries which differ both in population size and in average level of income, then of course the proposition does not hold.

Mr. Stockman. I am just trying to lead you one step further, though. Population can come from natural birth or it might come from removing barriers to the highest level of extraction of the raw human potential.

Let's say the Common Market suddenly becomes a wide-open market. All the tariff barriers are removed; there are common levels of taxation and a common currency. Instead of 8 or 10 countries with populations ranging from 8 to 50 million, all of a sudden there is a market of 300 million people in which all barriers to the realization of that inherent capacity in population disappear. Shouldn't this produce a higher level of per capita income?

Dr. Simon. I think that is certainly right. I would expect an increase in opportunities and an increase in population to work hand-in-hand with each other in such a way that both of them would act to promote economic growth more than either one of them separately. I think that is one of our fundamental ways of thinking, as economists, to assume that to expand opportunities, and to expand the possibilities for exchange and trade and communication, will always lead to improved economic performance.

Mr. Stockman. I have one more question.

I think I buy your thesis entirely, but there——

Mr. Scheuer. Will the gentleman yield?

Why do you not ask your question of Dr. Simon, then I will ask a question, and we will request him to answer later. Then we will shift to Dr. Freeman because he has to leave at noon; we will come back to Dr. Simon. He said something very interesting before.

He said he likes to think before he answers. That is a different precedent than in Congress.

Mr. Stockman. We do not even think before we ask.

Mr. Scheuer. You ask your question; I will ask mine.

Mr. Stockman. OK. This is a rather major question so maybe it would help you to have a few minutes.

I think I buy your whole thesis that there are not resource constraints, it is particularly clear on the mineral side. The thing that dramatized that to me was when I was out on the West Coast to speak to the Mining Congress and somebody pointed out to me in 1900 the real price for a pound of copper was $1. Today it is 60 cents, even though we were mining hybrid copper then and we are down to fractional analysis copper now. You can duplicate that all over.

I am wondering if you can make that same argument on the environmental side in terms the of the natural carrying capacity of the biosphere or biological systems. The whole Club of Rome argument is that there is a fixed amount of physical capacity on the part of the different biological systems, such as air or water systems, systems, to receive emissions from industrial activity.

Therefore, with increasing levels of aggregate output that you are calling for, there are going to be more and more emissions entering those systems. Now if their carrying capacity is fixed in some way, we are going to have to have higher and higher degrees of removal of those emissions and pollutants from the higher level of aggregate output. But, everybody knows there is a curve that tends to go straight up. The assumption is that with higher degree's of pollution removal, say from the tailpipe of a car or from the smokestacks of a powerplant, the cost escalates exponentially. When you go from 10 percent to 90 percent pollution removal it does not cost much; when you go from 90 to 95 percent it gets more expensive, and from 95 to 99 percent it is prohibitive. The point is, as you have to go to higher and higher degrees of removal, it becomes more costly.

Their argument is that the cost curve is so steep that you reach a ridiculous situation. If you can answer that, then your whole population-environment hypothesis fits together and you will carry the day.

Mr. **Scheuer**. Assuming there is this kind of limit on the carrying capacity of the biosphere, how do you factor into it food needs, energy needs, environmental stress, nonrenewable natural resources?

Mr. **Stockman**. Yes.

Mr. **Scheuer**. Now I have one additional question for you to answer after we hear from Dr. Freeman.

We talked before about illegal immigration from Mexico. It was said that these people are coming in at the prime of their lives, at the peak of their productivity. You also mentioned just a few minutes ago the assumption that levels of everything were equal between countries. Well, of course we know all things are not equal between countries.

You have the push factor, which is the absence of jobs in Mexico, and the pull factor, which is the availability of jobs in the United States. But, the hard fact is that when these young people come here, they do not know the language, they do not have marketable skills, they generally are not literate in English, and frequently not in Spanish.

In a fairly sophisticated, industrialized economy, where do they fit in other than in the lowest of low-paying jobs?

We have had testimony from witnesses who felt that illegal immigrants who came here and filled these low-paying jobs may not perceive of themselves as immigrants, but really as residents of rural Mexico. They may not be frustrated by the lack of upward mobility and unequal pay because they perceive themselves as returning to Mexico with their savings.

But, their children will not be satisfied. Their children will not perceive themselves as rural Mexicans but as Americans. They will not be satisfied to be treated in an inferior status, unequally; they want the kind of life they see on television. What kind of group will this generation become? Will they be a cohesive part of American society or will they feel alienated?

How do the realities of this whole Gestalt match your theoretical statement that these young people come here at the peak of their productivity?

We will get back to you anon.

Mr. **Stockman**. Dr. Freeman.

STATEMENT OF DR. RICHARD FREEMAN, PROFESSOR OF ECONOMICS, HARVARD UNIVERSITY

[Prepared Statement in Appendix on p. 767.]

Dr. **Freeman**. I would like to direct attention to the effect of the large number of young people currently graduating into the job market on the economic position of young people relative to older people.

Let me first restate some of the facts that Isabel Sawhill gave to highlight the tremendous change in the age structure of the work force that has occurred recently.

In 1966, if you take the number of male workers less than 35 years of age and divide that by the number of male workers more than 35 years of age, the number comes out to be about 55 percent.

In 1976, that number was 78 percent, a huge increase in the number of male workers under 35 relative to the number of male workers over 35.

Mr. **Scheuer**. I do not understand these statistics. Are you telling me that there is a smaller percentage of under 35 year olds in the labor force than over 35 year olds or a larger percentage?

Dr. **Freeman**. It is smaller. There are fewer workers under 35 than over 35. But, because there have been so many people graduating from high schools and colleges; dropping out of high schools and colleges and getting into the job market, the relative number of people aged over 35 years to those under 35 years of age has declined.

Ten years ago for every worker over 35 there was about one-half younger worker under 35. Now for every worker over 35, among men, there is now three-fourths of a worker under 35. The ratio of younger to older workers has changed very sharply. There are many more younger workers today relative to the older workers.

Mr. **Scheuer**. Wait a minute. Is this the famous baby boom moving like a watermelon through a boa constrictor?

Dr. **Freeman**. Exactly.

Mr. **Scheuer**. And, by the year 2020 they are all going to be retirees?

Dr. **Freeman**. Yes. Because of the baby boom, we have the youngest work force we have ever had. Among women this is even more dramatic because the participation rate of young women has increased relative to the participation of older women. The group where this is most dramatic is among college people, because this big baby boom group has gone to college in numbers unprecedented.

So that among men in 1966, for every male college graduate over 35, there had been 0.6 male college graduates in the work force less than 35. Today, for every working college graduate male over 35, there is one under 35.

For women in 1966, for every woman college graduate over 35 in the work force, there had been 0.8 college graduates under 35. Today for every woman college graduate over 35 in the work force, there are 1.6 women college graduates under 35 in the work force. A tremendous change in the age structure of the work force has occurred because of the big baby boom.

Now, I want to talk about what that has done to the economic position of young workers relative to older workers. According to all the census statistics that I have analyzed, the baby boom has caused a tremendous decline in the relative wages of young people compared to older people. This change in relative wage rates makes good logical sense. With more and more young people per older person, one would expect the wage structure to change against the young.

Let me give some statistics to show the magnitude of this.

In the mid-1960's, a person aged 45 to 54 earned 74 percent more than a person aged 20 to 24. There is now a 100 percent advantage in the latest statistics.

In 1968, a male college graduate between the ages of 25 and 34 earned 38 percent less than a college graduate who was 45 to 54 years old.

Mr. **Stockman**. Are these for the population as a whole?

Dr. **Freeman**. These are broken down by sex. They are for men.

Mr. **Stockman**. So the 74 percent, that is male?

Dr. **Freeman**. Male, yes.

Dr. **Freeman**. College graduate earnings went from a 38 percent advantage for the older workers to a 63 percent advantage, as of the latest statistics.

For women, there really isn't much change because, for whatever reason, earnings by women of different ages haven't varied much. There is a steep profile for men. The older you get, the more you make. Among women, there hasn't been that kind of relation. The big influx of young women doesn't appear to have had much effect on what had previously been a flat age earning profile.

One lesson from this experience is that the wages in the society are really much more flexible than some people might have thought.

The changes in the last decade have been, in some sense, a very good experiment. Suddenly the supply of one group of people increased enormously for essentially demographic reasons, because of the baby boom, and we observed what happened to their wages relative to the wage of other people in the society. We saw that their wage goes down quite a bit relative to the other people in the society. This is what we would expect in a system that is reasonably economically flexible.

Some analysis that I have done shows that this change in the relative earnings is not due to the recession, although that has had some effect because young people suffer more in a recession than older people. The main force is the demographic change.

One can ask some questions about this. One is, what is going to happen to the young people who enter the job market in the 1980's as your watermelon ages.

Mr. **Scheuer**. They are no longer new entrants into the job market.

Dr. **Freeman**. As far as I can tell from the data, the young people who graduate in the 1980's, especially toward the end of the 1980's, will be in a much better position relative to older people for the same reason that the current group of young people are in a bad position relative to older people. This means that some of the youth labor market problem's we had in the 1970's are going to diminish in the 1980's as the demography changes.

The baby boom group has had a rather poor relative start in their economic life, and it is likely that their poor portion will persist for a good deal of time. This large generation of people will suffer for many years—possibly for their whole working life. Being born in a large group means competing with lots of people for the same kinds of jobs. Somewhere in the 1980's this huge youth group is going to get to a position where key promotions in their working life will be decided.

There will be a huge number of people competing for supervisory jobs, for traditional promotions. There will be fewer people for them to supervise. The largest group in the history of the country will be seeking these jobs. I think it will be a sizable problem for this generation as they proceed in their working lives. It really means they have taken a serious economic loss because their parents didn't pay attention to the fact that everyone else was having a baby and didn't postpone having a child until a later period of time.

Mr. **Scheuer**. What?

Dr. Freeman. It has nothing to do with their particular behavior.

Mr. **Scheuer**. May I ask you a question before you proceed? Will the problems encountered by the baby boom generation spill over to the smaller group following them? Will it be a seller's market for them or will the fact that this watermelon just ahead of them which is really having a tough time all along, shadow their careers too?

Dr. **Freeman**. That is a really big question.

Mr. **Scheuer**. I have a couple of kids in college. I want to know whether I am going to have to support them all my life. There are two daughters out of school, both lawyers, and they are doing OK even though they are in the watermelon. But, my two boys in college are past the watermelon.

Will it cast a cloud on their lives? Will they have a tough time because the effects of the watermelon will spread both ways?

Dr. **Freeman**. To some extent they will, but it is my feeling that because of the way the job market operates with the employers going to campuses and really distinctly wanting new graduates rather than people who have been out for 4 or 5 years, they will not suffer for much of their working lives. Also because older workers are higher paid than younger workers, it may be easier and cheaper to hire the new person.

It is my speculation that in fact the people who graduate into the 1980's will do much better; they will not suffer that much from being next to this huge group. That is probably true of the people who will be graduating into the job market in the late 1980's.

Now, for high school graduates or high school dropouts, people who are more likely to be in blue collar jobs, it is not clear because there the preference may indeed operate the other way among employers; that is, they would prefer those who have more experience. We know that the employment rate among people drops sharply with their age, indicating employers may prefer the 25- to the 20-year-old, all else the same. There may be quite a different effect for the two kinds of groups.

Mr. STOCKMAN. Dr. Freeman, I think we are beginning to see your thesis. From my point of view I think you have a serious—all things being equal—problem too. Implicitly you are assuming that a 45-year-old is inherently more productive than a 28-year-old in some abstract sense.

I would think that can be shown. You can go back to Alexander the Great, who conquered the world when he was 23.

Mr. SCHEUER. Congressman Stockman is the first Republican under the age of 30 who has ever chaired a major committee in a Democratic Congress.

Mr. STOCKMAN. That is quite an achievement.

Mr. SCHEUER. How old are you?

Mr. STOCKMAN. Thirty-one.

Mr. SCHEUER. Thirty-one-year-old Republican chairing a committee in a Democratic Congress.

Mr. STOCKMAN. The point I am getting to is this: It seems to me if you had a parallel increase in physical capital formation and intellectual capital formation, that group could have been absorbed, the pie would have been bigger; there would have been more opportunity to go up the supervisory structure in the entire hierarchy.

You would have needed more technicians, more senior managers, and so forth. For that reason, there would have been more upward mobility for some of the brighter, more productive, more capable, more talented hierarchies who are members of this generation, and you wouldn't have had that squeeze at the bottom that is depressing the relative rate of wages compared to years ago.

That rapid expansion in labor force growth rate was deliberately met with the wrong policies. We raised the level of taxation enormously in the last decade, slowing down the rate of intellectual capital formation and the rate of physical capital formation.

The attack on capital gains, the 30-percent increase in the tax rate from 1965 to now, and the increase in transfer payments have all slowed economic growth. During the great waves of immigration there was enormous growth of the labor force, but these waves occurred during periods when the economy was pretty wide open so that those people were ingested relatively easily.

These were the young people who were at the prime of life and we didn't have the problem then. So, I don't see why, just because you have an unusually large cohort, that this should cause some kind of problem on relative wage rates and relative lifetime opportunities, all other things being equal.

I don't think it is what the parents were doing in the 1950's on the fertility rate. I think it is what the Congress was doing in the 1960's and the 1970's.

Dr. **FREEMAN**. My analysis deals with what they were being paid. If you don't believe people are being paid more or less relative to their productivity, it does not affect the thrust of what I have to say. Some employers have seniority-based programs unrelated to productivity and that is all right. There has been no really strong analysis of the issue.

One of the things I did look at in this analysis was the effect of the growth of capital on the relative position of the young worker versus the older worker. Your statement is correct in the following way:

Certainly the absolute position of young people would have been much better off. Everyone in society would have been much better off if the economy had grown primarily through capital formation or better ideas or what-have-you. That would have benefited everyone. But you now ask: How would that benefit the older worker versus the younger worker?

The analysis suggests that capital formation does not have any marked differential effect on the younger worker versus the older worker. While everyone would have been better off, the relative position of the young wouldn't have differed very much.

It is also important to recognize that the society has absorbed this huge cohort of young people. Many more young people, including teenagers, are working today than 10 years ago.

Mr. **STOCKMAN**. I think you are missing my point that we could absorb all of them into the labor force by having them build pyramids and then they would all be working. The point is, we haven't absorbed them very productively because of the slowdown in the rate of capital formation.

Mr. **ERLENBORN**. These are public service jobs. They can be placed to work in public service jobs that are probably not meaningful and are demeaning to the people engaged in the activity. However, it reduces the percentage of the unemployed and the statistics look better.

Mr. **STOCKMAN**. Society doesn't value public service jobs very highly so we pay those workers the minimum wage, which depresses the relative wage rate.

The point is, when the economy isn't growing rapidly, the youngest people are the last ones hired. You have a surplus on the margin of the labor market which drives down the relative wage rate. But I don't believe there is any reason to believe that would have happened if we had not had a 50-percent reduction in the average economic growth rate since 1969, but instead maintained the pace of 1962 to 1968.

Dr. **FREEMAN**. In terms of the population growth rate as opposed to capital per se, it is definitely the case that the slower the capital growth rate, the worse off young people will be relative to older people.

If we had maintained a booming economy in this period, the young people would indeed have done better relative to older workers. With the machines and capital, it is much more complicated. It depends on the kinds of machines you are going to bring in. Certain kinds of capital obviously require very skilled technicians and you are not going to have young people working with them.

Mr. **Stockman**. I would dispute that. In every computer firm I have been to lately, the technicians are under 24 years old.

Dr. **Freeman**. I am not sure about the steel mills.

Mr. **Stockman**. The steel mills have technology.

Dr. **Freeman**. Take the huge steel mills, the Ford River Rouge plant.

Mr. **Stockman**. That is because they have seniority. That is union seniority. It has nothing to do with what the market might do.

Dr. **Freeman**. I can't dispute that. The computer industry is one instance where you are correct, but there are instances the other way.

Seniority rules, where they are in practice, pose a different situation. What the machines do to the wages of people is not obvious. For economic growth, I agree with you.

Mr. **Stockman**. Go ahead.

Dr. **Freeman**. I wanted to say a couple of other things.

One is, the way in which this burst of young people has affected the college system. What we have is an interaction. The biggest generation coming of age to go to college, together with the late 1960's booming job market for college people, which raised the fraction of the people deciding to go to college, produced the biggest number of college students ever. As the students have graduated, there have been economic consequences. The young college graduates today still earn more than young high school graduates, but their earnings position has been compressed relative to similarly aged people with lesser education.

This is likely to change as we go into the 1980's since we will have fewer young people graduating from colleges.

The last comment I wanted to make has to do with the youth unemployment problem, which is not addressed in the paper which I gave to you. It is true that we have a major, indeed, in some ways, extraordinary unemployment problem among young people of a magnitude that, when one looks at the statistics, is difficult to believe. I don't mean to make it difficult to believe that the census is not producing as accurate statistics as possible, but it is difficult to understand what on earth is going on.

Consider, for example, black young people just graduating from high school. Some of the BLS statistics for the last 2 or 3 years have shown that 6 months after graduation from high school, 45 percent of young blacks are unemployed and something like 20 or 30 percent are out of the work force. As a result, only a one-third hold a job. These are people not going to college. Some of the other BLS statistics indicate that upward of one-third of these people are not working at all over a year. To be without a job for an entire year is an astounding situation.

Mr. **Erlenborn**. May I ask about the young people, particularly the young blacks who compose an extremely large percentage of the unemployed? Have you studied at all the effects of the minimum wage on this problem?

Dr. **Freeman**. I myself have not. There have been a fair number of studies, some of which showed the minimum wage has an effect and some of which suggested it does not have a very big effect.

Mr. **Erlenborn**. It seems to depend on who commissions the study.

Dr. **Freeman**. In one of the review pieces, it was more how they handle the demographic aspects. If you analyze the big burst of young people correctly, the demographic variable picks up many of the effects other studies showed as a result of the minimum wage. However, I was not commissioned by anybody and this is just my reading of what the evidence would say as of now.

No one would claim that the minimum wage is increasing employment of young people. The question of the magnitude—how much of the rather huge rate of unemployment we see among these people—can be attributed to the minimum wage is an area of some controversy.

Mr. **Erlenborn**. There have been suggestions that growth in population, if accompanied by growth in capital including new technology, can provide a high per capita income and a good economy.

I have observed in the last 10 or 15 years, probably led by environmentalists, a rejection of growth and technology. The theory is, technology has brought pollution. Therefore advanced technology is bad. Let's reject technology altogether.

To what extent do you think this slowdown in the growth of technological advance may have affected the economy and the slowing of the growth in capital formation?

Dr. **Freeman**. In my sentiments, I agree with you. However, I haven't seen any detailed study of this that would let me make a scientific statement.

Mr. **Erlenborn**. I think we still observe that going on today. These may not be perfect examples, but they are ones with which we are all familiar. The SST was rejected by the Congress. It was advanced technology. Because of environmental considerations, whether valid or not, we rejected that.

The President is now rejecting advanced nuclear fission technology for the production of power, which is desperately needed. I think this all reflects an obvious growing concern for the environment, but the reaction seems to be to just reject technology because it has led us to the problem.

I personally think—I like your view on this—technology can help us find the answers to the problems that face us. Rather than to reject technology, we ought to try to get it under control and advance it.

Dr. **Freeman**. I certainly agree with that view. As Dr. Simon said, the stock of useful knowledge is the reason for the high standard of living we have today. To turn your back on technology is crazy.

Mr. **Erlenborn**. Has not our country lost the technological advantage that it enjoyed for many years over some of the other countries that are now world trading, not partners, but opponents?

Dr. **Freeman**. The latest scientific data put out by the National Science Board present a more complicated story. It turns out the United States, and very surprisingly the United Kingdom, continue to be the leading innovating countries in introducing new products, but for reasons that no one really understands, the other European countries and Japan have taken our innovations and actually made them more economically successful than we have been making them. It seems that we still produce most of the new commercially feasible innovations. Whatever diminishment there has been is slight. The problem is that we haven't made as much commercial success of our technology as other countries have.

Mr. STOCKMAN. Commercializing a new technology is a high-risk economic investment. Also, to the extent that incentives have been declining, maybe that is why we are not getting the advantage of the technologies we are producing in the laboratory.

Dr. FREEMAN. Possibly. I don't really know.

Mr. SCHEUER. Dr. Freeman, you have described the situation of urban black teenage unemployment. Does that suggest any policies that could be adopted by the Federal Government or by the States or local governments?

Dr. FREEMAN. As of now, I don't know the solution to the problem. Let me make a point about the statistics mentioned earlier. If there is one group of people we don't understand from the national public statistics and what is going on with them, that is these urban black youth. We know they are out of the labor force; we know that they are unemployed and we know many are unemployed and some are employed by the Government.

Mr. SCHEUER. Are they employed in the illegal sector?

Dr. FREEMAN. We don't know that. What we need is a study that would in some sense decide what the kids are doing with their time, whether they are engaged in illegal activities.

Mr. SCHEUER. I meant the illegal labor market. Are they working in sweatshops for subminimum wages?

Dr. FREEMAN. We don't know that. You see, the statistics are gathered in a way that provides little information about the people who are out of work. Either they are unemployed or out of the labor force. When they work we know their job, their wage rate, their occupation, and we have information so we can understand where they fit into the economy. For people without work, however, the Census doesn't ask detailed questions.

It is hard to recommend policy when you don't know what these people are doing with their time, and what is happening to them. We do know as they get older and they reach 25, of course, the unemployment rate falls very sharply. At that age they begin to enter the mainstream economy in some fashion, but there is a lengthy period of 5 or 6 years when all we know is what they are not doing. We don't know what they are doing.

Mr. SCHEUER. That is a gap in our data base too, isn't it?

Dr. FREEMAN. A major gap, yes.

Mr. STOCKMAN. Thank you.

You may proceed, Dr. Anderson.

STATEMENT OF DR. JOSEPH ANDERSON, ASSISTANT PROFESSOR OF ECONOMICS, WILLIAMS COLLEGE

[Prepared Statement in Appendix on p. 781.]

Dr. ANDERSON. My comments concern the same things Dr. Freeman talked about. I will discuss these issues in a somewhat different framework, hopefully to provide additional insights and to provide information concerning the effects of some public policies on the U.S. labor market, taking into consideration ongoing and prospective changes in the labor force.

We have widely heard that the demographic composition of the American labor force has changed dramatically in recent decades and will continue to change dramatically in the future. I provided some information about that in table 1 of the statement that I prepared for the Committee. Figures in that table are quite consistent with Dr. Freeman's observations of the increase in this decade of young workers relative to older workers in the labor market.

My discussion of the effects of age structure on the labor market is in three parts. First, I will discuss the possibilities for substitution among the various age groups that make up the labor force. Second, I will talk about some factors that affect the demographic composition of unemployment. In that discussion I will suggest some reasons why age structure changes may be related to changes in the unemployment rates of demographic groups, and to the aggregate unemployment rate. Then finally, I will try to venture some forecasts of labor market variables provided by a long-term econometric model.

Mr. **Scheuer**. Maybe you can give us some program and policy recommendations. This is our raison d'etre; this is why we are in business.

Dr. **Anderson**. Very well.

In your hearings you have heard that one of the prospects of future U.S. population change will be a rise in the size of the dependent aged population. However, the overall dependency rate probably will not be greater than it was in the 1960's. The reason for this is that there will be a fall in the proportion of the population that are young dependents. The fact that the dependency rate will be unchanged obscures the changing composition of the dependent population.

Yesterday, in the committee's hearings, a lot of emphasis was placed on that important fact. Something similar is going to happen within the working population. The proportion of the total population that is working will rise between now and the end of the century, but not very dramatically. However, there will be very important changes within the working population, changes in the relative sizes of age-sex groups. This would not be a particularly important phenomenon economically if one age group could easily be substituted for another. Then, all we would need to know to get important information about the labor force would be the size of the total labor force. Its composition in different age groups and in different sexes would not matter too much. If the number of young in the labor force were to grow relative to the number of older workers, employers could just hire more young workers relative to the old. This change in the relative sizes of different employed age groups would not require a change in the wages paid to the young group relative to the wages paid to the older group.

We intuitively feel—and Dr. Freeman's results are consistent with our intuitions—that there are very important differences among age groups in the labor force, differences that have economic significance. In my work, I have tried to test for that fact statistically and found, in fact, that this is the case.

As I said, to most of us this will come as no surprise, but it has some important implications that may not have been obvious. In particular, if there is an increase in the size of one age group relative to others, for all the members of that expanded age group to find employment, their average wage will have to fall relative to the wages of the other age groups. If wage adjustment does not occur instantaneously as relative sizes of age groups change, then unemployment among expanding age groups will be greater.

What I am saying is that different age groups in the labor force may not be easily substituted for each other. Information about the substitution possibilies among age groups is relevant to several current policy issues. Let me give a couple of examples.

Minimum wage laws are purported by some to have a disproportionate impact on the employment and wage opportunities of youth, whose lower level of skills and experience qualify them for lower average wages than older workers. The nature of the impact of a wage floor on the demand for the labor services of young workers, and on their wages and incomes, depends upon the substitutability of older workers and of capital for young workers. If we have some quantitative notion of how easily that substitution can come about, we may get sharper insights into the effects of different minimum wages levels.

A second example, the recently legislated increase in the mandatory retirement age may prompt an increase in the labor force participation of older workers. Changes in the age at which workers qualify for social security and other retirement benefits, as were discussed by Robert Clark in the hearings yesterday, and proposed changes in the adjustment of those benefits for early or for delayed retirement, may affect labor force participation of older workers.

Changes in the social security retirement earnings test passed by the Congress last December may increase labor force participation of older workers. If these recent changes prompt a significant influx of older workers into the labor force, the impact on the wages, incomes and employment prospects of other workers could be considerable. That impact also will depend upon the substitutability of older workers for younger workers and capital equipment.

Using data on the input and compensation of labor in the U.S. private sector for the years 1947 through 1976, I investigated the ease of substitution of age groups for one another in the labor force. My conclusion was that labor force age groups are not perfect substitutes for each other. That is, for producers in the aggregate to be willing to hire more young workers relative to older workers, the average wages of young workers must fall.

The relationship between changes in the average wages of different age groups in the labor force and changes in the demand for workers of different ages will be determined largely by how easy or difficult it is to substitute for an age group whose cost has risen. Substitution can be made either by hiring more workers of other ages or by using more capital equipment and less of the more expensive age group in the labor force.

Based on my investigations and attempts to measure these substitution possibilities, let me venture some rough guesses as to some of the partial effects of some public policies on the demand for different age groups.

My tentative estimate suggests that any measure, such as the investment tax credit or accelerated depreciation, that reduces the price of capital services by, let's say, 10 percent, will tend, other things equal, to increase the demand for capital by about 4.5 percent; reduce the demand for workers aged 14 to 24 by about 2 percent, for workers aged 25 to 54 by perhaps 3 percent, and for workers aged 55 and over by about 6 percent. Let me emphasize that these are partial effects. This is all-other-things-equal type of analysis and reflects only substitution possibilities. The important factor that is left out of this analysis is the effect of an increase in the capital stock on overall growth in the economy, which would create jobs. I am saying, given a static situation, if its price is reduced, capital will be substituted for labor and in approximately these proportions.

A second issue is the effect of raising the minimum wage. If that serves primarily to raise the wages of all workers aged 14 to 24 by, again let's say, 10 percent relative to other wages and prices, my estimates suggest that the demand for labor of that age group will fall considerably, while the demand for workers aged 25 to 54 might increase by about 2 to 3 percent and the demand for workers aged 55 and over might rise by about 3 percent. This reflects substitution of older workers whose wage levels, in the absence of the minimum, still would have been above the minimum wage.

Mr. STOCKMAN. Where did you get that? Are you saying the elasticity of demand is 2.5 for teenage workers? You have a 25-percent drop?

Dr. ANDERSON. That is my estimate of the elasticity of demand for teenage workers.

Mr. STOCKMAN. That is pretty high?

Dr. ANDERSON. Yes.

Mr. STOCKMAN. I think you are right; so does John Erlenborn.

Dr. ANDERSON. This is again what we call a partial equilibrium result, ignoring all the other changes in the economy. The estimates are derived by looking at aggregate production process in the United States as one where we have inputs of labor disaggregated by age, and of capital equipment, and by trying to estimate the elasticities of substitution among those inputs. Then we ask what happens if we raise the wage of one of those inputs—in this case workers 14 to 24—relative to the others. How will employers substitute and how will that affect the demand for each input?

Mr. STOCKMAN. You generated that empirically by running some regressions?

Dr. ANDERSON. Yes.

Mr. STOCKMAN. I think that is right.

Mr. ERLENBORN. Have you looked at this in a way to separate men and women in the work force? The reason I ask is, some of the studies relative to the increase in the minimum wage indicate that the young people are the losers; the gainers are not just older workers but primarily women in the work force and part-time workers.

Dr. **Anderson**. That may be right. The specific investigation that generated these results did not address that question, but I have, in another set of investigations, tried to estimate quantitatively the effect of the minimum wage on 8 different age groups of women and 8 different age groups of men. The results are generally that for most women whose wages, in the absence of a minimum wage, would be relatively low. The minimum wage increases unemployment. The big gainers from the minimum wage are prime-age males.

Mr. **Erlenborn**. Some studies have indicated that the youth are the losers in an increase in minimum wage; they lose the job or job opportunities, but women gain job opportunities.

Dr. **Anderson**. I have seen those studies. That is not what my research indicated.

Mr. **Erlenborn**. Your research does not show that? Have you made any investigation in your studies as to family income levels of the worker?

Dr. **Anderson**. No.

Mr. **Erlenborn**. The suggestion also has been made in some of these studies that the low-wage family or low-income families are the real losers and the part-time workers and the women who are the gainers in the substitution come from higher-income families.

Dr. **Anderson**. That is right. However, there is another side to that. There is some evidence that the low-wage youth that lose their jobs because of the minimum wage are from relatively high-income families. Youth that need a sufficient income to support a family have full-time jobs and are ordinarily earning more than the minimum wage anyway. So, as often is the case, there is a lot of conflicting evidence.

Mr. **Scheuer**. How do you explain that? The youth from upper-income families presumably are better educated.

Dr. **Anderson**. They are ordinarily looking for part-time jobs.

Mr. **Scheuer**. I see.

Dr. **Anderson**. A 16- or 17-year-old head of family ordinarily has a full-time job and is earning more than the minimum wage.

In my discussion so far I have used these substitution measures to try to provide some idea of the effects of price changes on the quantities demanded of labor inputs. The same measurements of substitution possibilities also give us an idea of the effects of changes in the sizes of different age groups on their relative wages—that is, how prices respond to quantity changes. This type of information may be quite valuable, particularly for this committee looking at the effects of demographic changes on the economy.

It seems reasonable to think of the size of various age groups in the labor force as being determined primarily by outside factors, such as past birth rates, and then by the levels of wages responding to these given input quantities. It is important to have some notion as to how wage levels may tend to change when there are changes in the sizes of different groups.

A rough idea is provided by the following estimates. If everything else in the economy could be held constant, a 10-percent increase in the labor input of workers aged 14 to 24 would tend to reduce their wages by 1 to 3 percent. A 10-percent increase in the quantity of labor of ages 25 to 54 would tend to reduce their wages by about 5 percent. A similar increase in the labor input of workers aged 55 and older would tend to reduce their wages by about 3 percent.

A change in the quantity of one input also will affect the wages that can be commanded by other inputs or other age groups. My preliminary estimates suggest that a 10-percent increase in the quantity of labor provided by workers aged 25 through 54 will tend to reduce the wages of workers aged 14 to 24 by about 2 percent, and a similar proportional increase in the input from workers 55 and older will tend to reduce the wages of young workers less than 1 percent.

These estimates have policy implications. The estimates of the size of the effects of a change in the size of one age group on the wages of other groups and on the returns to capital may be used to suggest some of the possible directions and magnitudes of the aggregate effects of the recent increase in the mandatory retirement age. If raising the mandatory retirement age prompts an increase in hours worked by workers in the oldest age group of say 10 percent, that might serve to increase the return to capital by about 1 percent, reduce the wages of young workers by something less than 1 percent, and have a negligible effect on the wage rate of middle workers. These effects of a possible increase in the quantity of input of older workers do not appear to be particularly large.

Let me note that no evidence has yet appeared that the rise in retirement age will prompt a large increase in the labor force of older workers. The trend has been toward earlier retirement and nearly universal retirement at age 65. Labor force participation after age 65 will certainly be determined much more by social security legislation, economic factors and social standards than by a mandatory age limit. Estimates of the potential proportionate increase of older workers that might result from an abolition of the mandatory retirement age level are around 6 to 7 percent, less than the 10-percent benchmark figure that I took in the examples.

Let me turn and say a few words about demographic changes and unemployment rates.

It is frequently observed that because of the differences in rates of unemployment among demographic groups, the changing age-sex composition of the labor force would have raised the measured aggregate rate of unemployment even if group-specific rates remained constant. The increased proportion of the labor force accounted for by demographic groups, which persistently have high rates of unemployment, younger workers and women, has increased the aggregate rate of unemployment.

For example, the unemployment rate in the fourth quarter of 1977 was 6.6 percent. But that rate would have been only 5.8 percent if the composition of the labor force were the same as it was in 1956 and each demographic group had its unemployment rate of the fourth quarter of 1977. So almost 1 percentage point perhaps can be accounted for by a change in the age structure of the labor force alone.

However, in addition to the fact that demographic groups with high unemployment rates have grown considerably in recent years, there have also been sharp increases in the unemployment rates of those groups that have grown the most. The high unemployment rate groups have grown, concurrently with an increase in their unemployment rates.

Mr. **Scheuer**. Excuse me.

Dr. Simon, I think what he just told us is relevant to the question that I posed to you earlier.

Dr. **Simon**. Maybe we ought to have it repeated.

Mr. **Scheuer**. I am not asking for an answer yet. Maybe you can incorporate that last sentence or two into your answer.

Dr. **Anderson**. We have observed an increase in the overall average unemployment rate that can be explained in part by the change in the composition of the labor force—that groups that persistently have high unemployment rates have increased relative to other groups because of the demographics of the fertility rate changes and the preferences of women moving into the labor force. But, I am saying that something else important has happened. As those groups have grown, their unemployment rates have also increased in a way that we cannot explain without looking at the evidence about substitutability. The general picture is portrayed in tables 2, 3, and 4 in my prepared statement.

The evidence that I discussed a few minutes ago concerning the substitution possibilities among labor inputs in production suggests an explanation of how an increase in the size of a demographic group may frequently prompt an increase in its rate of unemployment. That evidence indicated that a shift in the relative supply of workers of different demographic groups requires an adjustment in their relative wages.

If wages are inflexible in the short run, this process of adjustment may be prolonged. While relative wages are adjusting to what is the new standard appropriate to the new composition of the labor force, excess supply of the expanding demographic groups will result in an increase in the group rates of unemployment.

Here again, with reference to the minimum wage, we would expect anything which slows down the wage adjustment process to be associated with an increase in the unemployment rate.

I investigated the relationship between the relative sizes of labor force demographic groups and their rates of unemployment. For each of the three demographic groups that I have mentioned, age groups 14 to 24, 25 to 54 and over 55, and for each of 16 demographic groups, 8 age groups for each sex—I estimated statistically the relationship between the group rate of unemployment and its share of the labor force and the shares of other groups. For each group there was a significant positive relationship between its labor force share and the group unemployment rate.

Let me emphasize that nothing is inevitable about this relationship. I don't want to imply a necessary element of causality. Several comments have been made today that we have not perhaps taken the policies, both in terms of the management of aggregate demand or in providing incentives for growth of the economy, that would have been necessary to prevent the rises in unemployment. I am not saying there is any inevitable relationship, but the data indicate that a relationship has existed during three decades.

I conducted a second experiment to acquire information about the determinants of the unemployment rates of each of the 16 age-sex groups that relates to some of the issues brought up by Dr.

Sawhill and Dr. Freeman. For each group, I estimated the relationship between the average annual unemployment rate of the group and the labor force shares of each of the following four groups: Males aged 14 to 24, females aged 14 to 24, females aged 25 to 44, and females 45 and over. These four particular demographic subaggregates were selected to serve as explanatory variables because their shares of the labor force have shown considerable variation over the period, and because there has been speculation that substitution among these groups may have occurred. Such substitution tendencies would be reflected in a positive relationship between the substituting group's labor force share and the replaced group's unemployment rate. So I expect—if there has been such substitution—as one group is growing—that growth would be positively associated with the unemployment rate of another group. Let me give you some of the results.

Unemployment of teenage males was positively associated with the size of the labor force of males aged 14 to 24, as the notion that age groups are not perfect substitutes would predict. As the group of teenage males grew, their unemployment rate increased. In addition, males aged 14 to 24 appeared to substitute for females aged 14 to 24 and for females age 45 and over. The share in the labor force of females aged 14 to 24 was positively associated with the unemployment of males 18 to 34, indicating substitution of young women for young men, as well as substitution of young men for young women—one would not necessarily imply the other.

The two groups of women aged 25 and older appeared significantly to have substituted for teenage males. Their expansion was positively associated with the unemployment of young men. The shares of both females aged 25 to 44 and females aged 45 and older were positively associated with the unemployment of females age 45 and over.

Finally, females 45 and older appeared to have substituted for males age 45 and older and for all the female age groups except ages 14 to 15.

Let me emphasize that this evidence is only descriptive and is very tentative. By descriptive I mean that this investigation has identified some relationships that seem to have existed, but it doesn't provide any explanation. I do not want to associate with this evidence any rigorous theory that would imply that one of these factors is causing another, but it should alert us to some possibilities. It certainly suggests that the demographic structure of unemployment and the aggregate unemployment rate are related to changes in the demographic composition of the labor force.

Again let me emphasize, I do not want to attach any notion of necessity to these relationships and would certainly not want to point the finger of blame for teenage male unemployment at an increase in the participation by women in the labor force.

Finally, let me turn to some forecasts of labor market developments between now and the end of the century.

The research I have just described was undertaken for the purpose of developing an econometric model of the U.S. labor market that provides annual forecasts of a considerable number of variables describing the labor market. The model was developed to investigate and to forecast the effects of demographic change on the labor market and on the economy. Given projections of demographic data, the equations of the model are solved for each future year to provide forecasts of the variables characterizing in the labor market.

I would like to report just a few of what I believe to be interesting aspects of the forecast that are based on the most recent Census Bureau population projection. That is the projection that assumes an ultimate fertility rate of 2.1 at about the turn of the century, and corresponds to ZPG.

The specific labor market forecasts that I am going to describe today do not vary significantly between the two ends of the range of ultimate fertility rates assumed by the Census Bureau, between 1.7 and 2.7. Even in the year 2000, the size of all age groups aged 24 and older do not vary with different assumptions with respect to the fertility rate because those people were already born by mid-1976.

First, I estimated labor force participation rates for each demographic group in the labor force. For most male groups there is no major change over the forecast period. And for ages 14 to 24, I forecast perhaps a slight decline; ages 25 to 54, perhaps a slight decline but nothing significant. Within those groups, the participation rate for the 10-year age group, 45 to 54, is forecast to decline the most, from about 93 percent in 1977 to perhaps 88 percent by the end of the century. For the age group of males 55 to 64, the rate falls from about 80 percent now to about 72 percent in the year 2000. For the over-65 age group, it is about 21 percent in 1977, falling to about 10 percent in the year 2000.

Let me emphasize that in these forecasts I assume there will be no major institutional change. The forecasts are provided by projecting the effects of time trends, wages, income, and demographic variables on the participation of these age groups in an essentially unchanged social and institutional environment.

For women, quite marked changes are forecast. The age group 14 to 24, is forecast to experience a considerable rise in participation, particularly for women ages 18 to 24, whose participation rates, I suggest, will rise from about 60 percent now to about 70 percent by the end of the century. The participation rate of males of that age is forecast to fall from about 80 percent now to about 72 percent at the end of the century. So in this age group, we see a convergence of the participation rates of the two sexes, a convergence that Dr. Sawhill, in her testimony before this committee, observed in past data, and suggested would probably continue in the future.

For women, aged 25 to 54, a continuation of the very strong rising trend we have observed over the past two decades is forecast with their overall participation rate rising from around 50-57 percent at the present to about 70 percent for women aged 25 to 34 at the end of the century, and perhaps 80 percent for women aged 45 to 54. Again, a convergence in the labor force behavior of women and men is forecast.

For women aged 55 to 64, I suggest a rise from about 41 percent now to about 60 percent by the end of the century.

These changes in participation and the changes in the age structure, combine to create considerable changes in the size of the labor force of different demographic groups.

For men aged 14 to 24, because of the slight decline in participation and the stabilization of the population of the group, there is almost no change by the end of the century in the size of the labor force of that group. The size falls through the 1980's as the lower fertility age groups enter the labor force, and then rises again toward the end of the century. In 1977, the size of that group in the labor force was about 14 million. In the year 2000, I forecast it will be about 13 million. So, there is no major change there. This forecast is based on the assumption that the total fertility rate will be 2.1. Using the Census Bureau series corresponding to a fertility rate of 1.7, the size of this young men's group will diminish considerably. If you use the Census Bureau 2.7 fertility rate series, it will expand.

For men aged 25-54, quite a large increase is forecast. In 1977 there were about 37 million men in this age group in the labor force. By the year 2000 that will be about 51 million, a 38 percent increase.

Virtually no change is forecast in the number of men over 55 in the labor force: about 9 million in 1977; about the same number at the end of the century. So, the numbers of young men and old men are almost exactly the same, but there is a large increase in the number of prime age men. At the turn of the century the baby boom age group will be in the ages of 35 to 50.

For women, roughly the same pattern holds, but because of the increases in participation there is some growth in all the age groups. About 11 million women aged 14 to 24 were in the labor force in 1977; I would suggest about 13 million by the end of the century. Aged 25 to 54, the change is very dramatic. About 23 million women were in the labor force in 1977. That will be perhaps about 42 million by the end of the century, an 83 percent increase in the number of women in the prime ages. For women over 55, in 1977 about 5 million were in the labor force; at the end of the century perhaps 9 million.

With the increase in the numbers of women in the labor force, there is, of course, a corresponding increase in the share of total income earned by women.

In summary, there is a rise in the proportion of the labor force of prime age men and women, with the other age groups virtually unchanged. What is even more important is that there will be a dramatic rise in the proportion and number of women in the labor force. As you have heard again and again, in our planning for social programs from now until the end of the century—child care, health care, education, social security—such programs must be designed for a society in which most women of all ages participate in the labor force.

Finally unemployment. You have discussed the catastrophically high unemployment rates of youth we experienced in the 1960's and 1970's. For the age group 14 to 24, my projections are that unemployment rates will fall notably during the 1980's for both males and females, due to the reduction in the size of this age group entering the labor force. If the fertility rate rises as high as 2.7, as assumed in Census Bureau series I, the high projection, then teenage unemployment again rises quite markedly by the end of the century as a second large group of teenagers enters the labor force.

For the age groups 25 to 54, unemployment rates remain fairly steady. This group as a whole is sufficiently large. There is enough substitutability among different 10-year age groups within the larger prime age group that a sharp increase in one specific group—remember that the baby boom lasted only about 10 to 15 years—can be accommodated fairly well without the catastrophic increases in unemployment that occurred when that group first entered the labor force.

Again let me emphasize that these results are from a very aggregative perspective. They don't take into account considerations that have been raised concerning the effects on the attitudes and abilities of individuals suffering prolonged periods of unemployment. If their labor force attitude and abilities have been impaired in some way, such that as they age and move through the labor force they can never really recover—that fact is not taken into account in this overall view.

Given all the other problems that have been created by age structure changes, we can at least hope that the unemployment problem will be alleviated to some degree by natural forces between now and the end of the century. On that hopeful note I will conclude.

Mr. **Erlenborn**. I have one question about the statistics you used for your analysis and that is the Bureau of Labor Statistics unemployment statistics. It has been suggested by some that they don't necessarily reflect the same thing today that they did, say, 10 years ago because of various factors.

One is that people who are really not in the labor force may appear to be because it is a qualification for certain welfare programs. That was not required in the past, so they are showing up now in the BLS statistics even though they may not be actively seeking employment.

Another is the availability of food stamps, and extended unemployment compensation. It means people don't necessarily take the first job that comes along. I am not certain that BLS differentiates between part-time and full-time job seekers. I think there are many more women seeking part-time employment who don't have any real dependence on working, but would like to pick up some extra money to augment the family income. These women appear in the statistics now in greater proportions than in the past.

Do these factors bother you when comparing unemployment today with 10, 15, or 20 years ago, or projecting what will happen in the future?

Dr. **Anderson**. Yes. Let me say a couple of things.

First, in terms of the collection of the data. In fact, BLS does not distinguish between part-time job seekers and full-time job seekers when calculating the unemployment rates. If an individual worked for 1 hour during the previous week, he is considered employed.

Dr. **Freeman**. Although they don't investigate it, there are questions which would break up the jobs you are looking for, or the kind of jobs you have. You can tabulate that from the data tapes. The employment and training report of the President does not break this up, but it is available on the tapes and you can recalculate the statistics for precisely that. The Census has some reports on this.

Dr. **ANDERSON**. The raw data from which my estimates were derived are the tapes that give the overall unemployment rate of the various demographic groups. They do not distinguish between part-time and full-time workers.

Second, you have mentioned institutional and social changes that would change people's attitudes toward employment and unemployment; that would make some people more willing to accept a longer period of unemployment for various reasons, and be better able to do so. That would be largely accounted for by the techniques that I use to derive the estimates, primarily by the treatment of changes that are associated with the passage of time per se.

The estimates are derived by a technique called multiple regression. That technique sorts out and measures separately the influence of each of a set of what we hope are "explanatory variables" on other variables, whose behavior we are trying to explain, which we call the dependent variable. If, after all the effects of the explanatory variables have been accounted for, there remains an underlying time trend in the dependent variable, that trend should represent the effects of the social and institutional changes the Congressman referred to. It does not explain how those changes came about, but it does approximately measure their effects. If those factors continue to operate in the future in the same way that they did in the past, projecting that time trend, along with the effects of the other explanatory variables, will provide useful forecasts.

Dr. **FREEMAN**. I have just finished reading a study by Kim Clark and Larry Summers of Harvard University having to do with the welfare reporting problem and unemployment compensation. These factors inflate the unemployment statistics though not by as much as was suggested in the study at the University of Florida.

However, if one ignores the unemployment issue and just looks at the employment divided by population this statistic looks worse for the young blacks than the unemployment data indicate.

I am very suspicious of the meaning of "the labor force." It turns out a lot of people report that they are out of the labor force one month—I am no longer working, I am very unhappy and discouraged—and 2 months later they are back in. There may be a major problem identifying certain subsectors of the society because they are reporting themselves in the labor force or out of the labor force.

This year we had a student, Joseph Cooper, who went to the unemployment lines in Massachusetts and did a questionnaire of the people. He asked them If they had received a job offer. You have to worry about how honest they will be in answering this. Nevertheless, this was a very able student who told them he was going to use this information because Government policies were all messed up and he would use this to illuminate the truth and help them.

Seventy-five percent of the people said they hadn't had a job offer at all. With an awful lot of these people, it is not a question of rejecting an offer. Some of the 25 percent who had received offers were rejecting high-paying jobs, relatively high-paying, but 75 percent had not had an offer at all during their whole period of unemployment.

Mr. **Scheuer**. What reasons did they offer for rejecting a high-paying job?

Dr. **Freeman**. It wasn't in their area; they didn't like it. There were all kinds of personal factors.

I want to focus attention on the point that the majority of the people just didn't receive any job offer.

In May 1976, the BLS did a survey of job searchers. This student did the same thing. He asked them how much money they were spending; how many hours they were looking for a job, and so forth. Most of the people were, in fact, spending $10 or $15 a week on travel in search of jobs and spending a fair number of hours.

The same thing comes out in the BLS job-search question. The people do seem to be actually searching and would like to work. This is the 75 percent, and not the 25 percent who had offers and had rejected them for whatever reason. One of the real surprising things is that the teenagers—whom you would have thought are not doing a lot of searching and are the most questionable people as to whether they really want jobs—were reported to be spending as many hours as the adults in actually engaging in an active search process.

The thing I want to stress is, that while there are obviously people rejecting job offers, the evidence shows that the bulk of the unemployed are not getting any offers. That was in the 1975-76 recession.

Mr. **Erlenborn**. When we talk about unemployment politically, we usually project the figure of "head of household" who has been unemployed for 6 months or a year, or several years and the family is suffering because the breadwinner is unemployed. Yet some of the figures I have heard about average periods of unemployment quite surprise me. An average period of unemployment was something like 8 or 10 weeks.

Dr. **Freeman**. I think those are misleading numbers for some groups. It turns out a lot of these people don't end the spell of unemployment by getting a job. They actually end it by leaving the labor force. The next time they are surveyed, they say, "I am not in the labor force."

Mr. **Scheuer**. If they are not in the labor force, where are they?

Dr. **Freeman**. Then they are no longer counted as unemployed and they are reported as just out of the labor force.

Mr. **Erlenborn**. Again, we don't have any interest in them. If they are out of the labor force, we forget them.

Dr. **Freeman**. That means a lot of short spells of unemployment end not by the person getting a job, but by leaving the labor force.

If you look at how long a person is between jobs, it roughly doubles the 8 or 10 weeks reported for a spell of unemployment. Then you are talking about people who are 4 months between jobs. A lot of people have been saying it is of short duration. They have just ignored the fact that a lot of people aren't getting jobs at the end of the spell of unemployment.

Mr. **Stockman**. Aren't those figures based on insured people?

Dr. **Freeman**. No. Teenagers would never be calculated. This is based on the current household survey of the Bureau of the Census.

Dr. **Sawhill**. Could I say something in response to your earlier question about the usefulness of the unemployment rates? We did some work recently that looked at the family income situation of people with various durations of unemployment, including the total unemployed population. We looked at how many of them were the prime earner in their family; how much family income there was; how many children; etc. It was very clear that in this day and age unemployment is a very bad measure of economic hardship.

One statistic I remember off the top of my head is that 80 percent of all of the unemployed people were not poor—even in the year in which they were unemployed and therefore had a certain number of weeks when they weren't earning anything.

This was based on looking at a full year's experience and how many weeks the individual was unemployed during that year and what the family's income was during that year. Most of the family incomes were not very much lower than the family incomes of people who have jobs.

If we are going to continue using the unemployment rate as some kind of a surrogate for economic hardship or the need for income it is a bad measure. That doesn't mean, I don't think, that it is therefore not a good measure of something else. I think what it does measure is the underutilization of human resources and the output the economy could produce if we were to put people to work.

Mr. **Erlenborn**. It is a measure of economic activity or lack of it?

Dr. **Freeman**. Yes. Not utilizing our resources is a terrific loss to society. So, although I don't think it is a good measure of people's income status, I think it is a very good measure of the health of the economy.

Mr. **Erlenborn**. Would you agree that the politician's profile of the unemployed as the head of household and family suffering is not correct?

Dr. **Freeman**. It is way out of line.

Mr. **Stockman**. Talking about unemployment insurance, Dr. Freeman's colleague has done a lot of work on the after-tax rate of wage replacement which is very high in many States, especially in the urban States which now have relative economic stagnation. If people can get 80 or 85 percent of their previous take-home pay from insurance, that surely has to be a major incentive to withdraw productive resources from the economy or to not look too hard or to go to the places where they know jobs won't be open to meet the requirements of the State's unemployment insurance office. But, it seems to me that if we have the growing trend of two wage-earner families continuing into the 1980's and 1990's, then unemployment insurance ought to be rethought.

Dr. **Sawhill**. I think it should be related to income rather than to unemployment. It depends on what the purpose is, and if the purpose is to shore up family income, our current system doesn't make a lot of sense.

Mr. **Erlenborn**. You are referring to what politicians refer to as a "needs" test. You are supposed to give regardless of need.

Dr. **Sawhill**. Could I add one other thing?

Mr. **Scheuer**. I would like you to elaborate on this explosive subject.

Dr. **Sawhill**. Actually, I wasn't going to do that—although perhaps I should.

Mr. **Scheuer**. Please speak for yourself and not for the Manpower Commission.

Dr. **Sawhill**. Absolutely.

Mr. **Scheuer**. All of you speak for yourselves and not for your universities.

Elaborate a little bit on what I see as your emerging thesis that our present system of unemployment compensation is not particularly relevant to the real problem and that we ought to have an agonizing reappraisal of it and maybe to change the focus.

Dr. **Sawhill**. I think unemployment compensation was originally conceived of as an earnings replacement system in a world where the model was a single earner per family. If that individual lost his income, that family would be in trouble. I don't think it is terribly controversial to say that all of this has changed. On the other hand, we should not ignore the need of many people for income replacement.

Mr. **Scheuer**. But you say 80 percent of the unemployed don't need it.

Dr. **Sawhill**. I said 80 percent aren't poor. Surely there is a drop in income that occurs when people become unemployed.

Dr. **Freeman**. Your figure included unemployment insurance during the year, is that correct? You are saying they are not dropping down too much because there is this net underneath them.

Dr. **Sawhill**. No; I don't think it does. I would have to doublecheck that.

Dr. **Freeman**. It is a very interesting point.

Mr. **Erlenborn**. You will check that and report back to us?

Mr. **Scheuer**. Do any of you have any contributions to make on this?

Dr. **Anderson**. While rethinking the treatment of unemployment and maintenance of the income of people who are unemployed, we want to keep in mind the distinction that was very important when these programs were set up and I think is still very important politically—the distinction between social insurance and welfare. Unemployment compensation is conceived of as a form of insurance to protect people against unforeseen job loss, regardless of what their income is. Similarly, social security is to guard people against the loss of employment ability that occurs with age and disability, regardless of what their income is. Many groups in the United States have felt that it is important to distinguish between these types of programs that are like insurance programs on the one hand, and welfare on the other, which is directed toward establishing a minimal level of income for everybody.

Mr. **Stockman**. If you look at the unemployment programs, they have deviated from the original purpose.

Dependent's benefits do not necessarily come under social insurance. There are various rights of replacement, depending on the wage level; that entails very large means testing, directly or indirectly, of the element in it. I think we should throw that method out as fast as we throw out the social security mess. Why confuse them with that?

Dr. **Anderson**. I think we want to recognize a very important political and psychological role that the distinction has played and continues to play.

Mr. **Scheuer**. If any of you have further thoughts on this point, send them to us and we will include it as part of the written record.

I would also like to ask unanimous consent for the witnesses to either tell us now or to send us their thoughts on what further data we need on this unemployed group.

Maybe you can tell us in general the kind of information we ought to adduce and which Federal agency should collect the data. We need to know a great deal more about this group.

Dr. **Simon**. With respect to this information, Dr. Sawhill earlier said that if unemployed people represent a terrific loss to the economy, it seems to me one of the kinds of information you want to get about these people—though it would be difficult to get it from them directly—is how much contribution these people would make to the economy if they were in fact employed rather than unemployed.

If I were to ask Dr. Sawhill how big is the terrific loss or gain we would get from a change from 6 percent to 2 percent unemployment, surely it wouldn't be 4 percent of GNP because the people going from unemployed to being employed are not likely to be average producers in the labor force taken as a whole.

I certainly would have no idea what the answer would be. I would also doubt that anybody else would have any idea, as of now, just what the productivity of these people would be. I don't know how you would find it out, but it is the kind of information ultimately you would like to know.

Mr. **Scheuer**. This is the question for Dr. Simon. These illegal immigrants coming across the border are supposedly in their most productive years. We are faced with a tradition and not a fear, as Grover Cleveland said about 100 years ago. What is the impact of this group of illegal immigrants on our economy? Are they fitting in? Do they have skills? Are they productive? I don't know. If you can enlighten us, we would look forward to your answer.

Also, I would like to have all of you think about this. We have rollcall now, but I am willing to come back. Are you returning, Dave?

Mr. **Stockman**. Yes, if you are willing to stay.

Mr. **Scheuer**. I would like to know more about how some of these new perceptions of yours relate to our traditional image of structural unemployment. Has something new been added? Who is this group? Is this just a single cohort—and I apologize again for using that word—that is moving through our economy? Do we have a Shakespearean play with five different plot lines here, with one group which is distinctly related to age and another group consisting of discouraged workers?

What is the profile of this problem and what are the societal implications of that? What are the policy and program implications?

Mr. **Stockman**. Those are the second bells. So we will suspend temporarily.

If you can wait, we will be back.

[Recess.]

Mr. **Stockman**. The committee will come to order again.

Mr. **Erlenborn**. I just have two, short questions, one to follow up on unemployment insurance and what it does to statistics.

There have been those who have observed, because we have unemployment insurance paid on an experience basis but with a cap that is fairly low, that an industry that is seasonal and needs large numbers of employees at some times but doesn't necessarily need those large numbers at other times, feels quite free to lay off workers because it doesn't cost them any more. They reach the maximum contribution and they are not going to pay any more. They use this as a management tool.

The employees see it the same way. Unemployment compensation, is really an extension of their job during periods when they are not actually working. However, they don't actively seek other employment; they are just waiting until the need for their warm bodies on the production line occurs again in the seasonal fluctuation.

Is this a factor also; do you have any idea as to whether we ought to change that by taking off the cap or not making it an experience ratio?

Dr. **Anderson**. It seems clear that the unemployment insurance system does subsidize industries characterized by seasonal variation in the demand for labor, and subsidizes the wages of individuals who happen to want to work in industries like that. Agriculture and tourism are probably the best examples.

The presumption of economists is that producers should pay the full costs of production, and consumers ought to pay the full costs of the product. If part of the cost of seasonal production is that you have to pay workers more while they are working because they know they are not going to be working a full year, then that cost should be paid by the consumers of seasonal products. Unemployment compensation relieves producers and consumers of the cost of using labor seasonally. If producers had to pay the full cost of an unstable pattern of labor use, they might try to smooth out that pattern or economize on the use of seasonal labor. If consumers has to pay the full costs of products that use seasonal labor, they might consume less of such products, in turn reducing the demand for seasonal labor.

You asked for some estimate of the magnitude. Martin Feldstein has estimated that if seasonal unemployment could be avoided completely, the average unemployment rate would fall by more than three-fourth percent. We would not want to eliminate seasonal unemployment completely, of course. But, we would want the full cost of unstable employment patterns to be paid by producers of seasonal products and, in turn, by their consumers. Then market forces would prevent excessive use of seasonal labor and the accompanying unemployment.

Mr. Erlenborn. I would like to make an observation because you reminded me of something when you said that the employer should take into account the period of unemployment and compensate that with higher pay. Schoolteachers have used this argument. I think their compensation has been set on that basis.

Yet a couple of years ago, when we hastily passed a bill to extend unemployment compensation to public workers, we unintentionally covered schoolteachers They were planning, not all, but many of them, to go down to the unemployment office come June and get on the unemployment rolls until school opened up again in September. Fortunately, I was able to head that off with an amendment on an appropriation bill and it never happened. I guess that is just human nature.

Mr. Scheuer. Point of information: Are teachers paid generally on a 12-month basis or just on the 8 or 9 months that they work?

Mr. Erlenborn. I think it varies. In some places they have a choice of taking it in 9 monthly checks or 12 months over the course of the full year.

Mr. Scheuer. Presumably, if they are paid their full year salary in 9 months, they could go on unemployment compensation.

Mr. Erlenborn. They can't now because of the way I had the law amended. But they were going to be qualified.

Mr. Scheuer. Yes.

Mr. Erlenborn. One last question.

We have talked about the baby boom. We now know there is a so-called baby bust, where the fertility rate has dropped rather dramatically.

In our population commission, the Rockefeller Commission, on which both Congressman Scheuer and I served, we studied the implications that this might have for the security of the United States; that is, would we have sufficient manpower for our armed services?

I wonder how you might view this question. Will this, say, in the 1980's be a problem, particularly with an all-volunteer Army, in being able to get sufficient manpower to provide for the security of the United States?

Dr. Sawhill. Can I say something about that?

Mr. Erlenborn. Yes.

Dr. Sawhill. It seems somewhat paradoxical that we have a tremendous youth unemployment problem, and at the same time we have a volunteer Army that is begging for manpower. It would be worthwhile, I think, to explore the possibility of a national youth service which wouldn't necessarily just be militarily oriented.

Mr. Erlenborn. Are you thinking of a voluntary or a draft type of service?

Dr. Sawhill. Well, that would be one of the key issues that would have to be explored.

Mr. Erlenborn. I observe at this point that at one time when this idea was put forth, it was pointed out that, even during the time we were fighting in Vietnam, we had the draft, and we were only taking a very small percentage, something like 10 percent, of the eligible age group.

Mr. Scheuer. That is because of the college exemption.

Mr. **Erlenborn**. No; they were within the eligible age group, and our manpower requirements were 10 percent of that elgible age group. If we had universal service, it would be tremendously expensive because we would be taking 100 percent and putting them to work; with many in civilian positions. I think there is a question as to our ability to finance universal service.

Dr. **Sawhill**. Well, I would say that you would have to pay some training or quasi-volunteer wages. Again you could make it a means tested system and expect a certain amount of voluntary service, possibly. There are lots of ways you could work it.

Also don't forget that we finance a lot of higher education for people who may really not be all that interested in higher education but who are going on because there are no jobs and there aren't subsidies for other types of training and other types of service.

For the future, I think that we are going to rely more and more on women. The Defense Department is already conducting some recruitment drives to involve more women in the volunteer forces. So, I am not sure that the shortages are going to be all that great. I think the issues will remain: Who is sufficiently trained, particularly, in the basic competency sense—reading, arithmetic—rather than are there enough warm bodies around? As you probably know, the armed services are fairly choosy about who they take and who they reject.

Mr. **Erlenborn**. Do any of the other witnesses have any observations they want to make?

Dr. **Anderson**. With respect to the national defense, to back up what Dr. Sawhill said, by expanding our horizons to include women, we have virtually doubled our potential manpower, compared to the situation when women were not thought to be appropriate for various responsibilities.

With regard to national security, specifically, the comment I am going to make also applies to a lot of the concerns that people have voiced about the effects of declining fertility and the baby bust. We should remind ourselves about the distinction between the absolute changes in population and relative changes. With falling fertility, the birth rate has fallen dramatically, and the number being born per unit of population or per woman has fallen. These relative numbers have fallen so dramatically, in fact, that the absolute numbers have fallen also, so that fewer people are being born now than were born 10 years ago. But that absolute decrease is not nearly as dramatic as the relative decrease, because the number of women of child-bearing age has increased.

Given the technology of national defense, absolute numbers are probably more important than relative numbers. Let's look at projections of the absolute size of the population. In 1977, there were 14,400,000 men in the age group 18 to 24, from where most military manpower comes. In the lowest Census Bureau population projection that figure will be 11,200,000 in the year 2000. This, is with the lowest fertility rate assumption, where the fertility rate falls to 1.7 and remains there, which is unlikely. If it returns to 2.1, which I think is a better guess, then the size of that male age group will be 12 to 14 million between now and the end of the century. It doesn't grow larger, and that is an important change. We have a history of a growing population, so it is a big change when an age group doesn't grow. But, 11 to 14 million still provide ample manpower to take care of the national security. In 1976, at the peak of the Vietnam war, there were 2.2 million men of this age in the military, and total military personnel were 3.5 million. All of this ignores women.

Dr. **Simon**. Joe Anderson just made an interesting point which I would like to use as a lead in. He mentioned that the absolute number of births has actually fallen. Mr. Erlenborn just earlier mentioned the President's Commission, and Mr. Stockman was talking earlier about our accuracy of forecasts.

It is interesting that the report of the President's Commission came out in 1972, and in that 1972 report it said there will not be a year in the next 20 years when the absolute number of births will be lower than what it was in 1970. The first year in which the absolute number of births was lower than in 1970 was 1971. So not only is there a problem in forecasting, there is even a problem in "backcasting."

Mr. **Scheuer**. When was the report written?

Dr. **Simon**. It came out in 1972.

Mr. **Erlenborn**. It was written in 1971.

Mr. **Stockman**. 1971?

Dr. **Simon**. OK.

Anyway, on the matter of national security, I want to take a long-run view, just as always. In the long run, a country's military capacity is likely to be a function of its absolute size, just as Joe Anderson was mentioning. And, the relative military power of the United States and Sweden is likely to be a function of the absolute relative populations of the United States and Sweden. I think we should keep our eye fixed on that rather than on the short-term fluctuations. Then I concur with what Joe Anderson has said.

There are several questions I did not get to earlier.

Going backward, Mr. Scheuer asked a couple of times about the contribution of the Mexican immigrants to the economy; how they specifically fit into the economy. I think I can pass on to you some other people's data on them. Some of this I think you have heard from Professor Cornelius from MIT who has testified, and Piore and you also had David North testify. I think David North's conclusions are not exactly the same as his data. Other data are found in Villalpando's reference to two studies done by the Internal Revenue Service and by San Diego County. All coincide very neatly. This is what they say.

First of all, you can measure the contribution of the Mexican migrant to the economy which can be measured in terms of wages, and we know what their wages are. As to how they fit in, in terms of the substitutability for other kinds of workers, in the two experimental studies done on the west coast that Villalpando told us about, the IRS went out and grabbed 300 to 400 Mexican immigrants and then watched to see what happened to their jobs. Something of this order was in both studies.

In both these studies, they couldn't find American citizens to fill the jobs. In one study, the jobs simply went unfilled. In the other study, they got the jobs filled all right, but they were with legal commuters from Mexico, so there is really very little substitutability between what the Mexican migrants do and what anybody else might do. We know what kinds of jobs they hold also. They work as waiters, and the like.

Mr. **Scheuer**. Piore's reaction to that would be to eliminate the secondary labor market.

Dr. **Simon**. I don't know what he means by that exactly. Even if I knew what he meant by it, I don't know how one would go about that. What did he mean by "secondary labor market"?

Dr. **Sawhill**. It means to force employers to use more capital and pay higher wages and provide better labor standards. If they have no choice, they will do that.

Mr. **Scheuer**. I think he meant a conscious effort to encourage labor union organization. I think he specifically mentioned strict adherence to minimum wages and conditions of work.

Dr. **Simon**. I don't know what would happen. I can tell you from his other studies what the migrants do under present conditions.

Mr. **Scheuer**. What happens to the ones who don't work?

Dr. **Simon**. The ones who don't work don't stay. We also have good data on that. When the migrants come, they immediately find work. If they don't find work, they leave.

Also with respect to their children—this is an interesting question that I think you raised before about the children's aspirations and so on. The fact is that the children stay in Mexico and the migrants don't stay here very long. They come many times; they come for short periods of time, very often they come to work for the same employer year after year, and go back.

They average about 7 days being here before they find their first job and then if they are unemployed afterward that they immediately go back.

Mr. **Stockman**. Is it almost like a de facto guest labor policy?

Dr. **Simon**. I think so.

Mr. **Stockman**. We had one witness who suggested that the roots of this can be traced to the bracero cutoff in 1965 in that a lot of the same villages supply the undocumented aliens. The patterns seem to be the same, the seasonality, the return of the wages back to the Mexican economy and so forth.

Mr. **Scheuer**. It depends on the magnitude of the bracero program and type.

Mr. **Stockman**. You gave one answer that I want you to rethink. The question was posed: let's eliminate the secondary labor market. You said you weren't sure what the outcome would be. I think the outcome would be that production would be lower. If you have less work done at the lower wage rate, then you have less output.

Dr. **Simon**. All my economist's instincts tend to agree with you immediately.

Mr. **Stockman**. If you substitute higher cost factors, technology or labor, production would be affected.

Dr. **Simon**. I would want to check through that to see if there are other things I have forgotten about, but on a first analysis I think that is entirely right. Per capita income of Americans falls under those circumstances.

Mr. **Stockman**. You argue strongly for immigration and I am glad to hear you argue that. Yesterday we had witnesses from the

Social Security Administration speaking on the aging population. We have the right impetus to funding social security with the arrival of the baby boom generation into the labor force. However, hospital costs continue to rise and the baby bust will soon diminish the labor force, posing serious fiscal problems for the entire social security system.

I suggest that we ought to have a 30-year policy of increasing the rate of immigration to fill the valley in the labor force. You can't talk about it now in the 1970's because everybody appears to be fighting for the argument that there is a fixed supply of jobs, but it seems that may be the solution 20 years out.

We won't talk about it today, but we can at least rely on it as an alternative as public psychology and political debate and rhetoric change.

Dr. **Simon**. It makes perfect economic sense to me. Whether it makes political sense, that is something you should know about better than I.

Mr. **Erlenborn**. It seems you have the wrong thesis that we don't talk about it now but wait for 20 years. If we start talking about it then, it will take 20 years for us to do anything and then we will probably implement the policy at the wrong time.

Mr. **Stockman**. I agree. I am just saying the climate right now isn't conducive to advocate higher rates of immigration. You wouldn't get too far back home with that.

Dr. **Simon**. That is probably right.

One difference between our policy and the guest worker policy that you mentioned is, unlike the guest workers in Europe who are legitimate, we rip off the illegal aliens; they can't get many benefits because they are illegal. They can't go to public hospitals, they pay social security taxes though they can never get any benefits from the taxes. They pay income taxes, and they can't send their kids to school. Guest workers have those benefits.

Mr. **Stockman**. What we ought to think about is formalizing this, or at least moving toward formalization where some of these factors could be corrected.

Mr. **Erlenborn**. No less an authority than Leon Castillo, the Director of the Immigration and Naturalization Service says we are going to have guest workers. Either in an unorganized illegal manner or we are going to do it in an organized and legal manner. I think those are the only two choices we have.

Dr. **Simon**. Leonard Chapman seemed to think there was a third alternative, which was to seal off the border hermetically.

Mr. Erlenborn. That is the Scheuer solution, isn't it?

Mr. **Scheuer**. I don't think we can ever seal it off hermetically. I think we can get closer to it than we are right now.

Right now it is an open sieve. If you ever go down to the border and go to the Naturalization Service Offices and look through their night scopes, you will see them. We have repealed the immigration law along that 2,000 mile border. With the numbers of people you see, it looks like it is Yankee Stadium at the end of the ballgame. It is not exclusively composed of young males. There are old people; there are mothers and small kids all. Large families are coming across holding hands like I cross the street in New York City with my four kids. I think we would have to do more thinking on the idea that there are just young, single males coming across. Unless my eyes were playing tricks on me, it isn't true.

Dr. **Anderson**. I think crossing a street in Manhattan is a bigger barrier.

Dr. **Simon**. Could I change the subject to go to another question? The question is, does my argument hold when we take account of environmental matters, food, energy, and nonrenewable resources, and what about the increasing cost of depolluting if we have more people rather than less people?

Mr. **Scheuer**. What is the optimal carrying capacity of the biosphere?

Dr. **Simon**. Of course, I am talking as an economist and not as a technologist, but it seems to me that our problem is, as always, to forecast what the future costs will be of all these goods. The future costs of clean air, of food, of energy and so on.

Now, I can produce data for you on the cost of food and energy. I can show you what the trends have been in the costs of foods, energy, and other commodities from 1800 until the present, and these tell the same story that Mr. Stockman got from the copper miners about the price of copper. The prices of all of these goods, all these primary goods—including energy, of course—have been falling over the entire period for which we have data. That says to us that the scarcity of all of these goods has been decreasing over this period of time, as population has grown during the same period of time.

Whether we can directly forecast the past into the future becomes the fascinating problem in forecasting. How does one guess what the future will be?

I was thinking about this problem and I went back to my experience as a businessman. I said, how does a businessman forecast what costs will be in the future? Businessmen very often have two sources of estimates on what the cost of something will be, what the cost of another McDonald's hamburger place will be, or what the cost of a dam will be, or whatever.

A businessman usually has two sources. First, there are engineering costs, where the engineers will come in and say it will take you 34,000 bolts and 18 pieces of wood and so on to build a McDonald's. Second, the other possible source, of course, is the cost of building a McDonald's last week or last month. A businessman will always prefer data from costs in the past to an engineering or technological estimate built up on the basis of the bits and pieces.

The businessman thinks this way: "If I know what a McDonald's cost me 6 months ago or a year, I know that nothing important was left out of that estimate. But if I make an engineering estimate of what a McDonald's will be today or tomorrow, who knows if the engineer will forget to put in the cost of the land or the cost of the labor or something else, or his calculations might be wrong. He might forget that we need nuts on the ends of the bolts.

So our best estimate, business problems and in economic problems generally, about what costs will be in the future is what costs have been in the past. If we look at what the costs of food, energy and resources have been in the past, we find that the costs have been declining over the entire course of human history. And, unless we believe that the world has changed as of today, or there has been some sudden discontinuity, there is no reason, in my view, to believe that this trend is not going to continue into the infinite future.

Mr. SCHEUER. Let me suggest a couple of possibilities as to something new that may be intervening.

No. 1, most of the arable land on Earth is under cultivation, so I understand from the Club of Rome and other sources. To make additional land arable requires great amounts of fertilizer and irrigation, both of which are tremendously capital intensive. This is the problem with the Arab lands.

Insofar as energy is concerned, we are rapidly running out of the easy sources of natural resources, number one of which is wood. The fact that we have denuded forests all over the world has caused an enormous destruction of fragile ecosystems. We are quickly depleting our natural resources of oil and gas. And, in the next 20 or 25 years, the projections state that we will be out of the cheaply extractable gas and oil supplies; with coal being the only fossil fuel left. The alternative source is nuclear energy with all its safety problems with which we are familiar. These seem to be the constraints, and therefore, all things aren't equal.

Dr. SIMON. Let me give you some data which I think run in an opposite direction. You mention desertification. I talk about this a little bit in one of the appendices that I included with my testimony. Much of the recent U.N. Desertification Conference came out of a book called "Losing Ground" by Erik Eckholm. I found that book very interesting, full of anecdotes, suggesting that the world was losing land.

I found statements in there saying, "Wouldn't it be nice if we had data so we could tell what was going on?" Then lo and behold, I ran across a book by Joginder Kumar, who finished a Ph. D. thesis at the University of Berkeley. He had found data. He had gone through the statistics of about 109 countries and looked at how much land they actually had in the years 1950 and 1960. First contrary to the statement that there are no data, there are data; second, contrary to the statement we were losing land, we were gaining arable land at a very fast clip. We were in fact gaining land at almost 1 percent a year during that 10-year period. The U.S. Department of Agriculture made a report which covered periods after 1960 and their general conclusion, though I couldn't find hard data for it, was that the same trend is continuing.

When we get down to the hard data, we find the facts about this terrible thing, which is exactly the opposite of that which filled up the newspapers and Newsweek and every other medium. Kumar's data never even got out of the library at the University of California in Berkeley, perhaps because nobody has any interest in dragging them out.

To repeat: as to arable land, we got solid data that run exactly contrary to everything which is written in the popular press about it.

As to the cost of building land, the cost of building land is high.

Mr. SCHEUER. Don't you mean retreiving land rather than building land?

Dr. SIMON. The agriculturists talk about building land. They talk about whole land being built out of the sea; they talk about farmland being built out of swamps. It costs money to build land, to create land. But it has always cost money to create land, and it costs less now to build land than it did in the past, because you don't have to go out and chop the tree down with an ax. You knock it out with a bulldozer.

Mr. Scheuer. There are places where there are no trees, only sand.

Dr. Simon. That is correct. As a matter of fact, we are doing that in the Pacific Northwest with another piece of technology. There are moving irrigation systems which you now can take a great wonderful desert out there, put in irrigation systems and turn what was sand into marvelous agricultural land.

In Illinois everybody thinks of Illinois 100 years ago as the frontier, this prairie where you came along and dropped a few seeds. I live in Champaign-Urbana, which is as rich as any agricultural area in the world. When people came there 100 years ago, it was a malarial swamp and you couldn't raise much of anything. All those lands around the university and throughout all of Illinois, where you now see these wonderful stands of corn, look like flat land. Underneath each of those acres are drainage systems. Tiles were put under those lands 100 and some odd years ago first by people digging those ditches with their bare hands so they could put down these tiles to drain the swamp into the ditches. Then they found out they didn't have to do it with their bare hands, but could get oxen to do it for them. They hitched up 24 oxen. Then they found they could do some of the work with steam machines. And, now we can do the same job enormously faster, enormously cheaper.

Yes, indeed, it costs money to build land, but it has always cost money to build land and it costs less now to build land than it ever has before. How long will this go on? That is a very complicated question. One of the things we do, of course, is substitute multiple cropping; we substitute all kinds of intensification systems for the use of traditional land. We have no reason in agricultural economics to think this trend is changing.

Mr. Scheuer. We have this room reserved only until 2 o'clock. We will have to leave in the next 10 minutes or so.

I do want to get any further thoughts that you may have on the characteristics of the structurally unemployed and the group known as "discouraged workers"?

What are the profiles of these two groups and what are the policy and program implications flowing from that?

We will expect very short, simple answers.

Dr. Anderson. This is not an area that I have studied so I can't give really hard information. I want to make a couple of general statements that we do know about and that should put the problem in a useful perspective for policymaking. But, they do not suggest what the answers are.

It seems to me that—with regard to this problem of the large number of young people without jobs, and particularly black people without jobs—we don't really know what they are doing, whether they are in the labor force or out, but that we can say without much doubt at all that in our economy today we are not producing or providing a sufficient number of jobs that people want to take. I can't say whether or not a black teenager in Washington or New

York could get a job if he really wanted one or what his future is going to be 3 years from now because of the experience he is having now or has had over the past decade. I think we can say we haven't had enough jobs that people have wanted to take.

Mr. **Scheuer**. What kind of jobs can't be filled?

Dr. **Anderson**. I am in a position where I don't know enough so I cannot go much further than that.

Mr. **Scheuer**. Do you feel we ought to collect data on this?

Dr. **Anderson**. I am just trying to create the perspective rather than the details.

It seems to me it is useful to remind ourselves that we have a very affluent economy. On the whole, goods and services are not really scarce in the United States as is the case in many countries over the world. We can afford to be a little bit softer in our approach to labor market issues and think about the importance of creating jobs people want to take rather than the importance of getting everybody to work to produce enough.

Certainly we are going to have to change the structure of jobs—and I don't have the answers to that—and perhaps we are going to have to change the attitudes and the abilities that people have. We are going to have to match the jobs to the people. There will have to be a change on both sides. But, it is useful to look at the jobs problem from the perspective that we should be looking toward creating enough jobs that are satisyfing to people. There must be jobs that people feel are meaningful and that can provide them with incomes that make them think it is worth their time to take the jobs.

A second distinction that is closely related to the jobs creation problem is the one that we use often in macroeconomics between voluntary and involuntary unemployment. We are realizing now, I think, one reason why the macroeconomic models that we used with some success in the 1950's and 1960's have not seemed to be successful in the 1970's. The models are based on the notion that people are not employed because there are not jobs for them; that doesn't seem to be the situation in the United States now.

Mr. **Scheuer**. What is the situation now?

Dr. **Anderson**. Today, most of the unemployment in the United States is voluntary. I most emphatically don't mean to imply that we don't need to worry about voluntary unemployment because everybody could actually find some kind of job if he really needed one, sweeping floors for $1.50 or $2.65 an hour. I don't think that recognition diminishes the problem, but I think that it is a useful perspective.

Mr. **Scheuer**. Sweeping floors should pay the minimum wage, which is a lot higher than $1.50 an hour.

Dr. **Anderson**. There are uncovered jobs. There are still uncovered jobs individuals could take.

Some amount of voluntary unemployment is useful if people use it to find appropriate jobs, and it is also beneficial for the economy.

Mr. **Scheuer**. Will that improve their education or sharpen their skills?

Dr. **Anderson**. That is right. A lot of the measured unemployment that we have is the transitional employment of individuals moving from one job to another. That is particularly high for teenagers and for women entering the labor force, or re-entering. We wouldn't want that to be zero. We would want people to look around and find the right jobs. We want it to be at some optimal level of voluntary unemployment, but we don't know what it is.

It is useful to look at the unemployment problem from these two perspectives: The necessity of providing jobs people want to take; combined with the notion that most unemployment is voluntary. But, that fact doesn't relieve us of the burden of trying to figure out policies to do something about it.

Mr. **Scheuer**. The taxpayers of this country are uncomfortable and unhappy that a great deal of unemployment is voluntary. These people are on unemployment rolls and welfare rolls and I think we are faced with the very real prospect of a taxpayers' revolt.

Dr. **Anderson**. Maybe I can make one statement that is a little more concrete. I would not interpret it as a social improvement if by abolishing unemployment insurance or all income support programs, we would increase the potential hardship for, let's say, black families in urban areas to the point that black teenagers had to take jobs somewhere. That is an extreme case, but I think that it speaks to many of the notions that we hear that people are unhappy that we have income maintenance programs and unemployment insurance programs which lead to an increase in measured unemployment. We could reduce unemployment by abolishing those programs. I certainly think that would not be an improvement.

Mr. **Scheuer**. What policies and programs do you suggest in terms of the problem of voluntary unemployment?

Dr. **Anderson**. I think we should pay more attention to efforts to match people with jobs. Perhaps we could learn something from experience abroad with youth employment information centers, where information about the types of jobs that are going to be available can be communicated to the people that are going to be coming onto the labor market. Their expectations can match possibilities, and they do not expect to move into a job that does not exist.

We should look at the structure of jobs amd see how they can be changed either through institutional changes, such as labor unionization or incentives for hiring certain types. We should try to go as far as we can in the direction of eliminating or modifying the types of jobs that people do not want to take and providing more of the types of jobs that people do want to take.

Mr. **Scheuer**. To the extent that that distinction is a realistic one, it may be that people want jobs for which they are not qualified.

Dr. **Anderson**. That is why I mentioned that we have to change the people as well as the jobs.

Mr. **Scheuer**. Right.

Dr. **Sawhill**. Well, it is a very tough area. For someone who claims not to be a labor economist, I think Dr. Anderson has done rather well, and I agree with a lot of what he said.

Let's take the youth problem since that is a big part of the problem. People 14 to 24 years old compose half of the total unemployment problem right now.

I think that there is an awful lot of frictional unemployment or job-hopping among this group. To the extent that this is the case, there isn't much of a problem. There may even be a benefit to society. We can take the entire group of youth and we can disaggregate them and ask: Where is the real problem?

Now let me tell you what I think we do know about that. If you think about the consequences of being unemployed, I think the two that concern us most among youth are: First, does it lead to crime and other types of antisocial behavior, and second, does it have long-term consequences for the ability of the individual to integrate into the labor market successfully?

The research here suggests the following:

First, there are aggregate studies that show that there is some relationship between youth unemployment and crime rates, but there is not the kind of refined evidence that suggests that if you provide a job to an unemployed young person, that individual is less likely to commit a crime. We simply do not have very good information about that.

On the long-term consequences issue, there was an interesting study released recently that shows that if you look at people who are unemployed at 16 to 19 and what becomes of them at age 25 to 29, they are the only group for whom a period of teenage unemployment determines their employment status at ages 25 to 29. Members of this group are both out of school and out of work when they are teenagers. If they were in school and unemployed, that does not seem to have any long-term consequences. If they were out of school and in a job, it is fine. It is the ones that somehow did not make the connection either with the world of education or the world of work that have problems.

Now, whether the relationship is then causal—whether their unemployment while young is causing the problems when they are older—or whether there is some third set of factors that has to do with personality or health or what have you, we do not really know.

But I guess the bottom line of what I have said is that there is a large group of youngsters whose employment probably ought not to cause us to be too overly concerned.

Mr. **Scheuer**. If they are either in school or working as teenagers?

Dr. **Sawhill**. Yes. The group we should really focus on, that should be the priority for some kind of public policy intervention, is the out-of-school and out-of-work youth. I say out of work, by the way, rather than unemployed because, as Dick Freeman said previously, there is this large group which has dropped out of the labor force, and we do not know what these people are doing. They may be involved in the irregular economy.

I do think that our programs have not really focused on the need to provide serious remedial training for young people who are in this at-risk population. There are political pressures to spread the money rather broadly, both geographically and demographically, and as long as you do that and you provide work experience programs that are, say, 4 months in duration and which do not involve any extensive supervision or any significant training component, you are not going to buy very much with your expenditure of public funds, other than a little income for an individual for some limited period of time. I think most of the people who work in the manpower area would agree with that point.

I would like to emphasize what was said about the need for a better matching process in the job market. I think there are European countries which have refined their ability to provide information on the kinds of jobs available and match the available jobs with the job-seekers much better than we have been able to do in this country.

Mr. SCHEUER. I understand that some countries, like Japan, have done this through the computer.

Dr. SAWHILL. Yes.

Mr. SCHEUER. The computer has linked people with jobs. Perhaps adding a third element of time, the computer could say, if this individual with his level of skills, work experience and education shows up at this place, after completing a training program, then he will have a perfectly good permanent job waiting for him at the end of the line. Is this something we ought to look into?

Dr. SAWHILL. I think it could help. I think your point that the young person needs to know there is a job down the road is an important one.

Our Commission has just set up a special task force on youth employment which is headed up by Dr. John Porter, superintendent of public instruction in the State of Michigan. He believes we first need competency tests at about the 10th grade level so that nobody will graduate from high school without certain skills, basic competencies.

Second, those youngsters who have successfully gone through high school and achieved those competencies, or received remedial training, need an assured job down the road, at least for some segment of time. This perhaps should be defined by family income, because we clearly cannot afford to guarantee everybody a job. The Labor Department is doing some experimentation with this area in its youth program, but I think it has to be linked with the willingness of the individual to acquire the competencies and go through remedial training if necessary.

Mr. SCHEUER. Are there countries using computers in Europe or in Asia that have accomplished this better than we have?

Dr. SAWHILL. I do not know the details on where that technology is best developed at this point. But my general impression is that there is more of it in other countries than there is here.

Mr. SCHEUER. Dr. Simon.

Dr. SIMON. I do not have anything to contribute to that, unfortunately.

Mr. SCHEUER. All right. Would anyone like to contribute something else before we adjourn the formal hearing?

Well, it is 10 minutes after 2. This has been a thoughtful and stimulating hearing. We thank you all.

This hearing is adjourned until next Tuesday.

[Whereupon at 2:12 p.m., the committee adjourned, to reconvene Tuesday, June 6, 1978.]

[Additional questions asked of the witnesses by the chairman.]

Additional Questions Asked of the Panel by the Chairman

Question 1. Do you feel that legislation to end mandatory retirement can counteract the growing trend to earlier retirement and more leisure?

Answer by Dr. Joseph M. Anderson:

No. As the standard of living rises, people desire to use part of the economy's increased productive capacity to have more leisure. Thusfar, institutional constraints seem to have prevented the reduction of hours worked per week much below forty for full-time workers. Increased non-employment time, therefore, has been taken by men at both ends of the working life cycle, in the form of lower labor force participation of youth, and earlier retirement of older men. These trends will probably continue.

At the present, the proportion of all retired workers that retired because of mandatory provisions even though they were willing and able to work is small. James Schulz estimates this proportion to be seven percent. That provides one estimate of the increase in labor force participation that might initially result from prohibition of mandatory retirement.

In many developed countries retirement at age 65 is much more universal than in the U.S. In the U.S. about 20 percent of males and eight percent of females age 65 and over continue to be economically active. the only industrialized country with a higher proportion is Japan, where about 35 percent of the population age 65 and over work. Some countries do not impose a social security retirement earnings tests, but still have smaller proportions of the older population in the labor force. In Sweden and West Germany individuals collect full retirement benefits upon reaching age 65, whether or not they continue working. Nevertheless, in both countries the proportion of the population age 65 and older that is in the labor force is lower than in the United States—11.7 percent in West Germany, 8.6 percent in Sweden.

If public and private pensions continue to provide adequate income, it is likely that the trend toward early retirement and widespread retirement at age 65 will continue.

Answer by Dr. Richard B. Freeman:

Yes, but I know of no study of this issue.

Answer by Dr. Isabel V. Sawhill:

No one knows, of course, what the effects will be, but there seems to be some consensus that the trend toward early retirement among blue collar workers will continue. The effects on white collar or professional workers are likely to be more pronounced. We have a paper on this topic being prepared by Dean Morse at Columbia University. He has little confidence in most of the estimates currently being cited on the effects of the new retirement law.

Question 2. Some analysts argue that pressures on labor markets and the educational system can be alleviated by encouraging adults to mix periods of work and education, in a lifetime learning experience. Can you comment on the merits of such a proposal and what role should the Federal government play?

Answer by Dr. Joseph M. Anderson:

The proposal should be evaluated on its own merits—not as an attempt to relieve pressure on labor markets or on the educational system. Pressures on labor markets are going to be alleviated by demographic trends that are already underway. The number of teenagers entering the labor force has already stabilized. The number of workers age 14–24 and age 55 and over will not change greatly between now and the end of the century. Most growth will be in the group age 25–54. Even this growth will not exceed the rates of labor force growth experienced in the past during some periods of rapid American economic growth and low unemployment. Absorption of an expansion of the labor force of this age should be easier than absorption of the burgeoning numbers of teenagers was in the 1960's and 1970's.

My opinion is that mixing periods of education and work would provide enriched lives and a more productive labor force. Many individuals and businesses recognize this fact and interrupt their own or their employees' careers to provide educational experiences. Such individuals and businesses apparently judge that the benefits from mid-career educational experiences justify the costs. Provision or subsidization of such mid-career educational breaks by the government is justified only if it can be demonstrated that the provision of such experiences to an individual will benefit others in society—that it will provide social benefits external to the private benefits it provides directly to that individual—and that those others benefited could not efficiently take measures to promote the provision of such educational experiences. Demonstrating that fact would be difficult.

Answer by Dr. Isabel V. Sawhill:

Fred Best of the Commission staff has written extensively on this subject (see The Future of Work, Fred Best, editor; "Effects of Work Scheduling on Time-Income Tradeoffs," Fred Best and James Wright, Social Forces, September 1978; "Preferences on Worklife Scheduling or Work-Leisure Tradeoffs," Monthly Labor Review, June 1978) and we will be holding a conference to examine this and other work time issues in the fall.

Answer by Dr. Richard B. Freeman:

Many more adults are already going back to school, as shown in BLS Special Report 184.

Question 3. Dr. Sawhill discussed possible special employment programs for inexperienced workers. Are CETA programs filling some of the needs for inexperienced workers in providing training and assistance in locating permanent jobs (non-public employment ones)?

Answer by Dr. Joseph M. Anderson:

My knowledge of CETA is very limited. In the few cases that I have observed, CETA seems to be successfully bringing workers into contact with employers and providing training in a way that benefits both workers and employers.

Answer by Dr. Isabel V. Sawhill:

There is very little data about (1) the prior experience of CETA participants or (2) outcomes for CETA workers, whatever their level of experience. (Some more evidence should be available soon from the Department of Labor's Continuous Longitudinal Manpower Survey.) Some evaluations of earlier programs show that inexperienced workers achieve the biggest earnings gain from participation in a training program. The two major groups of inexperienced workers are women and youth. Both groups are underrepresented in PSE programs relative to their unemployment shares. (See Table 2, p. 54, Job Creation Through Public Service Employment, Vol. I, Summary of Findings and Recommendations, Interim Report to the Congress of the National Commission for Manpower Policy, March 1978.)

Answer by Dr. Richard B. Freeman:

I don't know.

Question 4. Could you comment on the magnitude of the loss to our economy from underemployment versus unemployment. What measure of underemployment can you use.

Answer by Dr. Joseph M. Anderson:

Underemployment can be defined two ways. It can mean a situation where employers retain workers even when those workers are not fully needed at the time, or when those workers' output is worth less than what they are paid. The number of workers could be reduced without a corresponding reduction in the output of the business or of the economy. This situation may prevail in less developed countries when labor markets are characterized by serious distortions or where labor practices are dictated by traditions and customs. It also may exist during parts of the business cycle in countries such as Japan and the United Kingdom, where lay-offs are less common than in the U.S. In a country like the U.S., where labor markets work fairly efficiently for most groups and where lay-offs are not uncommon, underemployment of this type is probably not a problem. In fact, efforts to reduce outright unemployment by reducing cyclical and seasonal unemployment might increase this form of underemployment by encouraging employers to retain workers even when demand for their labor services is slack.

A second definition of underemployment refers to a situation where a worker works fewer hours per week than he or she would like because full time work at the wage desired or of the type desired by the worker is not available. In 1976, 3,272,000 people of the total non-agricultural employment of 84,188,000 (four percent) were reported to be working part-time for economic reasons. Of that figure, it was reported that 1,317,000 usually worked full time; 1,955,000 usually worked part time mainly because they could only find part time work. This provides one indication of underemployment of the second type. (During 1976 the average number of unemployed was 7,288,000, 7.7 percent of the labor force.)

Answer by Dr. Isabel V. Sawhill:

Underemployment is, in my opinion, a somewhat elusive concept. It could include anyone working below their capacity, of whom there are undoubtedly many. Alternatively, it is sometimes defined as all those earning too little to support a family or people working part-time for economic reasons. In my written testimony I argue that many women are "underemployed" within the home by which I mean they have underutilized talents and energies. A study by Lee Rainwater of Harvard based on a sample of women (18–64) in 8 common market countries shows that 57 percent of those women who were not in the labor force in 1975 would have preferred paid work. With the caveat that we don't know what kinds of jobs or wages they would find acceptable, this suggests a great deal more "underemployment" than unemployment. Put slightly differently, 38 percent of all adult women who want to work (including those officially unemployed) do not have jobs. I'm sure we would find something similar in the U.S.

Answer by Dr. Richard B. Freeman:

For underemployment issues I would look at the article in the Monthly Labor Review, Feb. 1976, by Shishkin.

Question 5. Could you briefly comment on data needs for the nonworking population, particularly for youth?

Answer by Dr. Joseph M. Anderson:

Outside my area of competence.

Answer by Dr. Isabel V. Sawhill:

As I noted in my testimony, there is some evidence that the most serious long-term consequences of teenage unemployment occur for those who were both out of school and out of work as teenagers. Yet we have no data on what teenagers with no connection to either the labor market or the educational system are doing with their time or what sources of income support they rely on. If we want to understand either the causes or the consequences of their status, we will need to know what activities and sources of income are competing with education and work. I would urge some survey research and some participant observer studies of this group with a focus on the urban minority component. The Commission has a new task force on youth which will be looking at these issues.

Answer by Dr. Richard B. Freeman:

I think this is the most important order of data problem. We need to know: (1) How much these people spend; (2) where they obtain spending money; (3) with whom they live; and (4) what they do with their time.

Question 6. Can you estimate what portion of current employment reflects "optimal" frictional unemployment? How do you define "optimal"?

Answer by Dr. Joseph M. Anderson:

"Frictional" or "search" unemployment refers to the measured unemployment that results from the fact that individuals entering the labor force or changing jobs take a period of time to find a satisfactory job, during which time they are unemployed. Optimal frictional unemployment can be defined only for a given set of labor market institutions. Let us assume that the longer an individual searches for a good job, on average, the better job he will find, i.e. the greater will be the increase in his future earnings. The cost to society of the search is the output of the individual forgone while he is unemployed searching. The benefit is the increase in productivity that he is able to achieve in a better job that he finds by virtue of his job search. The optimal length of search is that period that maximizes the difference between the present discounted value of the increased output resulting from the finding of an appropriate job and the present discounted value of the output lost due to the search. Without better knowledge about the relationship between the length of search and the increase in expected future earnings, we cannot estimate what the "optimal" amount of frictional unemployment is for a given set of institutions.

Frictional unemployment can be reduced by measures that increase the amount of information about jobs available to job-seekers and thus reduce the length of their search.

Answer by Dr. Isabel V. Sawhill:

I have seen estimates of 1 or 2 percent. The most recent employment data show 48 percent of all unemployment has a duration of 5 weeks or less which would be about 3 percentage points on an overall rate of 6.1 percent. "Optimal" implies that people have sufficient time to canvas the market thoroughly—that additional search time would enable them to find a better job. If they remain unemployed after this point—even voluntarily—then it is not "optimal" for the economy although it may make sense for the individual if he/she has other sources of income. A lot of job search takes place while people are employed.

Answer by Dr. Richard B. Freeman:

"Optimal" or frictional means to me short spells by people in the process of job finding. Today, 4 to 5 percent.

Question 7. Can you provide the Select Committee with further information on possible government policies to improve the process of matching people with jobs? Have other countries used computers to help search successfully?

Answer by Dr. Joseph M. Anderson:

Outside my area of competence.

Answer by Dr. Isabel V. Sawhill:

Computerized matching of people and jobs holds out a lot of promise and many countries, including the U.S., are moving in this direction. The idea has not really been implemented fully yet or sufficient experience accumulated to judge what difference it will make. For more information on this and related topics, see "Labor Market Intermediaries," Special Report No. 22 of the National Commission for Manpower Policy, March 1978.

Answer by Dr. Richard B. Freeman:

No real information.

ADDITIONAL QUESTIONS ASKED OF DR. ISABEL V. SAWHILL BY THE CHAIRMAN

Question 1. You mentioned in your testimony the importance of exploring flexible and shorter working hours so that two-earner families could manage childrearing better. What barriers do you see to the development of more flexible working arrangements?

Answer. The barriers appear to be: custom and inertia, greater administrative complexity, the inflexibility of some production processes, and wage and hour laws which prohibit more than 8 hour days, etc. See Sawhill and Smith, "Changing Patterns of Work in America," in volume of same name, Human Resources Committee, U.S. Congress, April 8, 1976.

Question 2. Based on some negative income tax experiments, some analysts argue that providing income security to women increases their propensity to divorce. Do you agree with this assessment? Do you feel that the increased opportunities for working women involve a simultaneous sacrifice of the strengths of the American family? If the goals of (1) a stable family, and (2) individual dignity, are at odds with each other, which should policymakers favor?

Answer. It is my opinion that income security does lead to more divorce because women are less dependent on marriage for income. (See MacDonald and Sawhill, "Welfare Policy and the Family," Public Policy, Winter 1978.) One needs to ask, however, whether preserving an unhappy or conflict-ridden relationship is a good thing. I don't think stable families are our ultimate objective because stable families are not necessarily happy environments for either children or adults. On the other hand, I don't think policy should favor female-headed families as it does (e.g., AFDC) at present.

Question 3. What help can the Government offer to ease the entrance into the labor force of "displaced homemakers" (women with children at home who must seek employment because of the death of their spouse or divorce)?

Answer. This group probably needs counseling (especially confidence-building), some skill training, and help with child care arrangements. Many find the transition easier if they can find part-time or temporary jobs as a way of "testing the water." Policies need to be based in the future on the assumption that virtually all women will work during their lives and many for most of their adult lives. I predict that adult dependency (except for the disabled) will become a historical phenomenon. In time, the displaced homemaker problem will go away. For further information, see "Homemakers: An Endangered Species," Journal of Home Economics, November 1977.

Question 4. Dr. Freeman documented the effect of the baby boom on the earnings of young male college graduates, who in the past have had steep age-earnings profiles. Do you feel that young women are now facing similar reduced payoffs to college attendance?

Answer. I have not looked at the literature on this topic. I would imagine that there are two offsetting trends. Young women are likely to earn more as occupational barriers break down (in the past college-educated women became secretaries) but they are likely to earn less for the same reason that Freeman cites in the case of young men.

Question 5. In your testimony you discuss a study of the family income of unemployed people. Could you provide us with the name of the study. Also, could you clarify whether or not the study included unemployment compensation in the definition of family income and what would the results be with and without unemployment compensation.

Answer. See Chapter 3, Table 5 of CETA: An Analysis of the Issues—Background Papers prepared for the National Commission for Manpower Policy, forthcoming. Income includes unemployment compensation. We cannot ascertain the sensitivity of the results to this factor but see "A Longitudinal Study of Unemployment Insurance Exhaustees," by Walter Nicholson and Walter Corson, Mathematica Policy Research, Princeton, New Jersey, January 1977 and "A Study of Recipients of Federal Supplemental Benefits and Special Unemployment Assistance," Final Report by Walter Corson, David Horner, Valerie Leach, Charles Metcalf, and Walter Nicholson, Mathematica Policy Research, Inc., Princeton, New Jersey, January 1, 1977.

Question 6. In your testimony you mention a recent longitudinal study of the effects of teenage unemployment on later life. Could you please provide us with the name of the study?

Answer. "The Relationship Between Teenage Employment and Future Employability," Wayne Stevenson, University of Utah.

ADDITIONAL QUESTIONS ASKED OF DR. JULIAN L. SIMON BY THE CHAIRMAN

Question 1. In your testimony you mention a dissertation on land availability. Could you supply us with the complete reference for this?

Answer. The refernce you seek is Joginder Kumar, Population and Land in World Agriculture (Berkeley: University of California, Institute of International Studies, 1973.)

Question 2. In your prepared statement you discuss the impact of population size and growth on productivity. Is the total size of the population or the rate of growth more important?

Answer. Both population size and population growth have an important effect upon productivity. If I had to say which is the more important, I would say population size. Even if it were not growing one year, the United States would produce more new technological knowledge than a small country such as Sweden, even if it were growing.

Question 3. Can a small country compensate for the disadvantages of a small population (in the advancement of knowledge) by large expenditures on research and development?

Answer. A small country cannot compensate for the disadvantages of a small population, simply because it does not have enough total resources to do so. Of course, a small country can take advantage of the technological knowledge that is produced by other countries, but to some extent each country must develop knowledge that is appropriate for its own circumstances. Small total output means that expenditures on research and development cannot be as large as those of a large country, even if the smaller country decides to commit more to it.

ADDITIONAL QUESTIONS ASKED OF DR. RICHARD B. FREEMAN BY THE CHAIRMAN

Question 1. You have written about the so-called "Over-educated American." Do you feel that the reduced payoff to college attendance in recent years is a permanent phenomenon, or does it simply reflect an oversupply of young workers today?

Answer. Represents an oversupply of young workers today.

Question 2. You have written about the past oversupply of engineers. Have mechanisms for informing people about the nature of the job market improved since then? What could Congress do to better match training and the availability of jobs?

Answer. Yes, see enclosed letter from Stanford.

Question 3. In your testimony you refer to studies made by: The University of Florida; the May 1976 BLS study of job searchers; and a student study of job searchers. Could you please provide us with complete reference information for these studies?

Answer. The study is by Clarkson and Meiners and is contained in Policy Review, Summer 1977, pp. 27-51. For a review see K. Clark and L. Summers, report to ASPER B-9-M-8 1037, May 1978.

The BLS study of job slackness is in the May 1976 CPS tapes.

The student study is by Joseph Cooper, undergraduate thesis, Harvard, 1978.

[Figure 5]

STANFORD UNIVERSITY,
DEPARTMENT OF ENGLISH
Stanford, Calif., March 11, 1977.

I am delighted to inform you that the Graduate Admissions Committee has approved your application for admission to the Department of English next fall.

I enclose a description of our fellowships. I hope you will find it informative. However, it is basically an explanation of departmental policy and does not represent a commitment on the part of the university per se. Such commitments are made by the Dean of The Graduate Division, who will contact you by mail on or about March 15 in order to present the university's formal offer.

Before entering this, or any other, Ph.D. program in English, you should understand that the prospects for permanent employment after you have earned the Ph. D. are generally poor. As a Department, we work extremely hard at placing our graduates, and they may expect to compete favorably for whatever jobs are available; but we do not anticipate that there will be many openings in the foreseeable future. Anyone who chooses to pursue a career in college teaching these days is taking a large risk. Please keep this fact in mind as you weigh your own alternatives.

We think highly of our departmental program, and the fact that we have singled you out of several hundred candidates obviously means that we think highly of you.

You have, as you know, until April 15 to accept the offer. Because we also have a duty to the highly qualified applicants on our waiting list, it would be helpful to us if we could hear from you sooner, however.

Again, congratulations. We look forward to seeing you in September.

Sincerely yours,

DAVID R. RIGGS,
Director of Graduate Admissions.

Enclosure.

ADDITIONAL QUESTION ASKED OF DR. JOSEPH M. ANDERSON BY THE CHAIRMAN

Question 1. Can you explain why capital can more easily replace older workers than younger workers? How does your finding relate to the correlation of age with experience, skills, and decision-making responsibilities?

Answer. The evidence that the elasticity of substitution between capital and older workers exceeds that between capital and younger workers should be considered tentative. The difference between the types of skills that older and younger workers have provides an explanation for this result. Older workers have greater specific skills due to the experience they have acquired. But because average years of formal education have increased through time, younger workers have more education than older workers. Education provides workers with general skills. It may be that capital equipment can substitute more easily for the specific skills of older workers than for the general skills of younger workers. Although decision-making responsibilities generally increase with age, individuals in those positions are a small minority. My data consider older workers in the aggregate. Any relationship between capital and persons with decision-making responsibilities would be swamped.

APPENDIX

Prepared Statements and Additional Material Submitted for the Record

Statement of Manuel D. Plotkin
Director, Bureau of the Census

before the

U.S. House of Representatives
Select Committee on Population

"FUTURE SIZE AND GROWTH RATE OF THE U.S. POPULATION"

May 23, 1978

Mr. Chairman, I am pleased to have this opportunity to discuss with this committee the projected growth of the U.S. population. I will address myself to the period from now to the end of the century and then to the year 2025 since many of the most significant implications of prospective demographic trends will become apparent during the first quarter of the next century.

The next 50 years should be a most unusual period in terms of population change and a very challenging period for those charged with planning for the social needs of particular age groups in the U.S. population. It will be a period of boom and bust for age-related institutions—schools and colleges, housing, retirement, pension plans, and even the undertaking business—as the baby boom generation pursues its course through the age structure of the U.S. population. It will be a period in which zero population growth—and even population decline could well become a reality; or in which fertility rates rise resulting in births equivalent to the number born during the post-war baby boom. It will be a period in which mortality rates for the middle and older ages may decline only gradually or continue their unprecedented decline of the last few years—a phenomenon which would increase the total projected population only slightly but would significantly increase the proportion of the population over 65—even above the record high rates currently projected. It will be a period in which international migration will play an important role in the U.S. growth rate if the rate of natural increase remains historically low—yet the size and even the direction of the net immigration component remain somewhat uncertain with the current lack of data on legal migration to and from the United States and only statistical speculation about the volume of illegal immigration.

What specifically can we say about the future size, growth rate, and age and sex composition of the U.S. population between now and 2025? The Census Bureau has prepared a set of population projections in which the U.S. population by age, race, and sex is projected for every year between 1977 and 2050. The Bureau has no crystal ball for making these projections and the numbers which result are only the mathematical outcome of applying what we think are reasonable assumptions about the future course of fertility, mortality, and net immigration rates for each age, sex, and race group to the current U.S. population structure. Since any set of population projections is the direct result of the underlying assumptions, it is possible, indeed it is virtually certain, that the future course of population trends will not follow our projected path exactly.

The fertility component of population growth is so important in its effect on total population growth and has behaved so erratically historically that it needs to be discussed even before we look at specific numbers from the projections. Fertility rates have varied widely over the last 50 years with the period fertility running from a rate of about 3 births per woman in 1925, down to about 2.2 births per woman in 1935, then up markedly during the post-war baby boom to a rate of 3.0 births per woman in 1950 and a very high 3.6 births per woman in 1960. Since 1960 birth rates have generally fallen to a rate of 2.9 births per woman in 1965 and 2.4 births per woman in 1970. The early 1970's saw another more dramatic drop to about 1.8 births per woman in 1974; since then the rate has fluctuated in the 1.7 to 1.8 range.

Given the potential volatility in fertility rates it is generally desireable to consider more than one fertility assumption; thus Census Bureau projections have a range of three different assumptions. In the high series the assumption is that fertility will gradually rise until it reaches 2.7 births per woman by 2015. For the middle series the assumption is that fertility will rise very slowly from 1.7 up to 2.1 births per woman by 2015. The lowest series assumes that fertility will eventually stabilize close to the present level of 1.7 births per woman by 2015. The basic reason for having the middle series rise back up to 2.1 is that Census Bureau surveys on birth expectations continue to show that women in the 18 to 24 year old age group expect to have an average of 2.1 births during their lifetime. This fertility rate of 2.1 births per woman represents the replacement level for the U.S. population at which the population would eventually reach zero population growth in the absence of immigration.

With this background let me describe for you some of the highlights in population growth as we project it for the next fifty years. Under all of the series the U.S. population will grow between now and the year 2000, but after that the totals will vary widely. Under the middle series the current U.S. population including Armed Forces overseas of 218 million will increase to

260 million by the year 2000 and 296 million by 2025 (Table 1). Under the high series population will rise much more rapidly to 283 million by 2000 and 373 million in 2025. Under the low series it would rise only to 246 million by 2000, and to 252 million by 2025, at which point the U.S. population would actually start declining.

The annual growth rate of the U.S. population for the past 5 years has been around 0.8 percent a year. Both the middle and low series of projections show a decline in that rate of growth. The middle series shows population growing at an annual rate of 0.9 percent a year for the next few years but then growing more and more slowly so that the growth rate in the year 2000 will be 0.6 percent and by 2025 it will only be 0.4 percent. The most significant turnaround in growth rates is shown by the low series which projects a decline in the growth rate from about 0.6 or 0.7 percent in the next decade down to 0.3 percent by the year 2000, reaching zero population growth by 2020, and then showing negative population growth of -0.1 percent by 2025. Thus even with net immigration of 400,000 a year, the U.S. in the next 50 years could reach zero population growth and then decline with fertility at close to present levels. Of course, there is also the possibility that fertility rates could rise up to the level projected by our high series in which case the population growth rate would vary between 1.0 and 1.3 percent a year between now and 2025.

These growth rates are a result of the changing relationship between the number of births and deaths in the coming years. Although the current number of deaths (less than 2 million) is considerably less than the more than 3 million births, the number of deaths is expected to rise markedly over the next few decades as the number of older persons in the population increases. This rise in deaths to 2.5 million in 2000 and almost 3.5 million by 2025 is greater than the expected rise in the number of births in the low series and almost as great as the rise in number of births in the middle series. Only under our highest assumption for fertility does the number of births increase faster than the number of deaths (Table 3).

As you can see, rather small changes in fertility rates can make major differences in the growth rates for which we have to plan. Fortunately, we have somewhat more stability in our projections of changing age structure. In fact, the knowledge of the current age-sex distribution and the aging process is one of the solid tools demographers have for projections. The simple arithmetic of the aging process goes a long way toward assisting us in projecting population. Although the populations in the younger age groups are projected to be somewhat larger under the high series and somewhat smaller under the low series, we can discuss the age structure generally in terms of the middle series.

During the next several decades, the major demographic factor will continue to be the aging of the baby boom population. The people born during the peak of that boom—the late 1950's and the early 1960's—will continue to be the largest population group throughout most of their lives. As this large group passes through each of these ages the institutions that deal with populations of particular ages will undergo the strain of rapid expansion and a decade or two later the often more painful task of precipitous retrenchment. We have already seen this process in our elementary schools. The nation's secondary schools have seen the expansion and are beginning to feel the effects of contractions. A similar process is underway in the nation's colleges and is also impacting on the housing industry, the entry-level job market, and other economic activities that focus on people in thier twenties. In a few years this boom-bust cycle will inevitably touch those institutions which are geared to the middle-aged and older population as well.

I have prepared a set of charts to show exactly how the age-sex structure will change. As of July 1, 1977 a graph of the U.S. population by age and sex shows the typical pyramidal shape except for the bulge due to the baby boom population in the 15 to 19 and 20 to 24 year age groups and the smaller population of younger age groups (Figure 1). By 2000, the bulge will have risen to the 35-44 age groups and will have an echo effect in the large number of youths ages 10 to 19 which will be born in the next decade as a result of the unprecedented number of baby boom generation women in the child bearing ages (Figure 2). Even with constant, low fertility rates per woman, the total number of births will rise due to the larger number of women between 15 and 45.

For the next century, projections of age-sex structure are more tenuous since future fertility will have a major effect. Even so, we do know that the baby boom generation born in the late 40's through the early 60's will increase the number of persons sixty-five and over to an all time high. From 24 million today the number is likely to increase to 32 million by the year 2000 and over 50 million by 2025. Under our middle series of projections the percentage of the population over 65 will remain about 11 or 12 percent of the population through the end of this century but will then jump to 17 percent by 2025.

The sex distribution as well as the age distribution is likely to undergo significant changes in the next 50 years. Today there are approximately 95 males in the U.S. for every 100 females. This ratio will remain fairly constant through the end of this century but will decline to 93 males per 100 females by 2025 as the baby boom generation advances in years and the higher mortality rates for males reduces that population faster than the female population.

We must not lose sight of the role of making reasonable assumptions in order to develop these projections. The two major sets of assumptions aside from fertility involve mortality and immigration. In both of these categories the Census Bureau uses only one set of assumptions for all three series. This is not because we believe these assumptions will portray exactly what will occur in the next 50 years, but rather because mortality and immigration have shown less variability than has fertility in the last few decades and the consequences of this variability on population growth have been much less than for fertility.

Since some questions have been raised in earlier hearings about the accuracy of these assumptions, let me discuss them briefly here—beginning with mortality. In the last few years, age-specific mortality rates have undergone some significant declines. Our most recent set of national projections incorporated the declines through 1976 and projected gradual future declines in mortality which would increase the life expectancy by 2050 from 69.1 to 71.8 for males and from 77.0 to 81.0 for females. These data are consistent with actuarial sets of projections made by the Social Security Administration.

At present the Bureau is pursuing the possibility of producing several series with varying mortality projections in the next update of the national projections. I understant that Mr. Siegel will have more to say about the implications of alternative mortality assumptions in his testimony before this committee.

The issue of immigration assumptions is somewhat different. This committee has heard some extremely high projections of population by the year 2000 purporting to incorporate the effect of illegal migration to the United States. The Census Bureau's projections assume an annual legal migration into the nation of 400,000. No component of illegal migration is assumed for the simple reason that there are currently no reliable data on the annual net illegal migration flows to the nation, and no sound basis for making assumptions about the future.

The extensive discussion about the assumptions which go into our projections is intended to underscore an important message; demographers are wary of precise prophesies, and devote considerable effort to reviewing and testing their assumptions. Projections are the outcome of this process, and valuable guides for planning so long as the limitations are kept in mind, as well as the alternative patterns of growth and change.

Perhaps when I mentioned that the next decades will be a very challenging period for those charged with planning for population growth, I should have added that it will also be a challenging period for those individuals and institutions—including the Census Bureau which try to shed light on the future.

Table 1.

Estimates and Projections of Total Population: 1950 to 2025

Year	High Series	Middle Series (in millions)	Low Series
Estimates			
1950	-	152	-
1955	-	166	-
1960	-	181	-
1965	-	194	-
1970	-	205	-
1975	-	214	-
1976	-	215	-
1977	-	217	-
Projections			
1980	224	222	221
1985	239	233	229
1990	255	244	236
1995	269	253	242
2000	283	260	246
2005	298	268	249
2010	315	275	251
2015	335	283	253
2020	354	290	253
2025	373	296	252

Source: U. S. Bureau of the Census, Current Population Reports, Series P-25, No. 704.

Table 2.

ESTIMATES AND PROJECTIONS OF AVERAGE ANNUAL PERCENT CHANGE IN TOTAL POPULATION: 1950 TO 2025

Period (July 1 - June 30)	High Series	Middle Series	Low Series
Estimates			
1950-1955	-	1.7	-
1955-1960	-	1.7	-
1960-1965	-	1.5	-
1965-1970	-	1.1	-
1970-1975	-	0.8	-
Projections			
1975-1980	1.0	0.8	0.6
1980-1985	1.3	0.9	0.7
1985-1990	1.3	0.9	0.6
1990-1995	1.1	0.7	0.5
1995-2000	1.0	0.6	0.3
2000-2005	1.0	0.5	0.2
2005-2010	1.2	0.6	0.2
2010-2015	1.2	0.6	0.1
2015-2020	1.1	0.5	-
2020-2025	1.0	0.4	-0.1

Source: U. S. Bureau of the Census, Current Population Reports, Series P-25, No. 704.

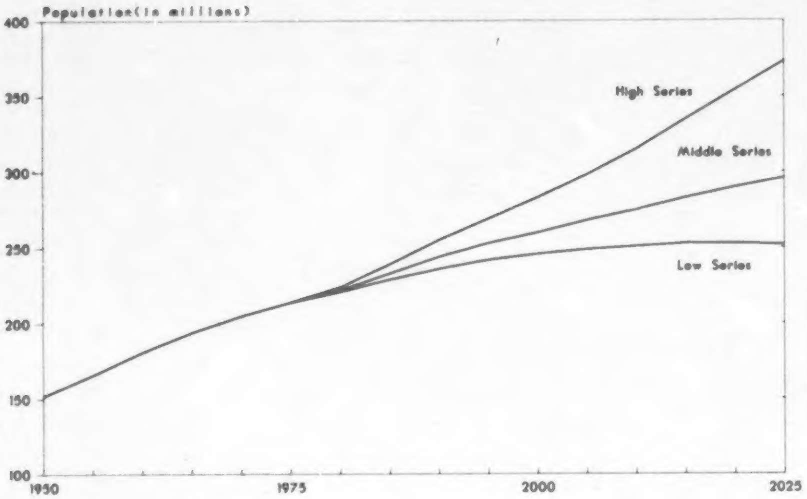
Table 3.

ESTIMATES AND PROJECTIONS OF AVERAGE ANNUAL BIRTHS AND DEATHS: 1950 TO 2025

	High Series		Middle Series		Low Series	
	Births	Deaths	Births	Deaths	Births	Deaths
			(in millions)			
Estimates						
1950-1955	-	-	3.9	1.5	-	-
1955-1960	-	-	4.3	1.6	-	-
1960-1965	-	-	4.2	1.8	-	-
1965-1970	-	-	3.6	1.9	-	-
1970-1975	-	-	3.3	1.9	-	-
Projections						
1975-1980	3.7	2.0	3.3	2.0	3.0	2.0
1980-1985	4.7	2.2	3.9	2.1	3.4	2.1
1985-1990	5.1	2.3	4.0	2.3	3.3	2.3
1990-1995	5.0	2.4	3.9	2.4	3.1	2.4
1995-2000	4.9	2.6	3.7	2.6	2.9	2.5
2000-2005	5.3	2.7	3.7	2.7	2.8	2.7
2005-2010	6.0	2.9	4.0	2.8	2.8	2.8
2010-2015	6.5	3.0	4.1	2.9	2.8	2.9
2015-2020	6.6	3.2	4.1	3.1	2.7	3.1
2020-2025	6.8	3.4	4.0	3.3	2.6	3.2

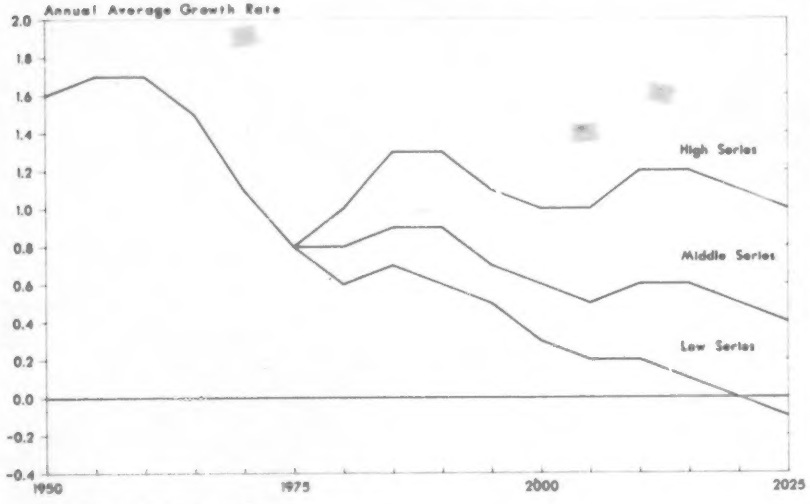
Source: U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 704.

Estimates and Projections of the Total U.S. Population: 1950 - 2025



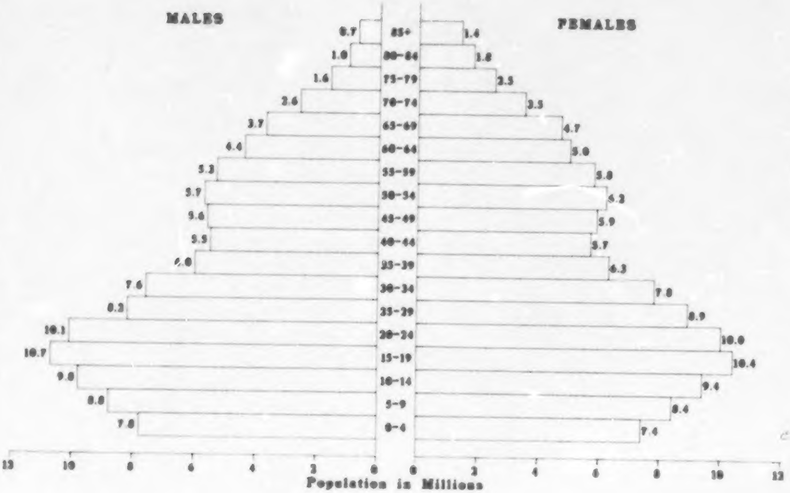
Source: U.S. Bureau of the Census

Estimates and Projections of Average Annual Percent Change in Total U.S. Population: 1950 - 2025



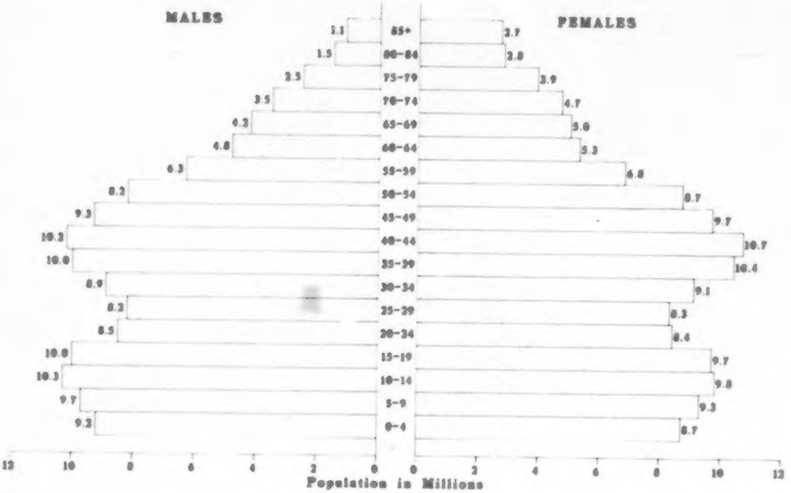
Source: U.S. Bureau of the Census

Total U.S. Population by Age and Sex:
July 1, 1977



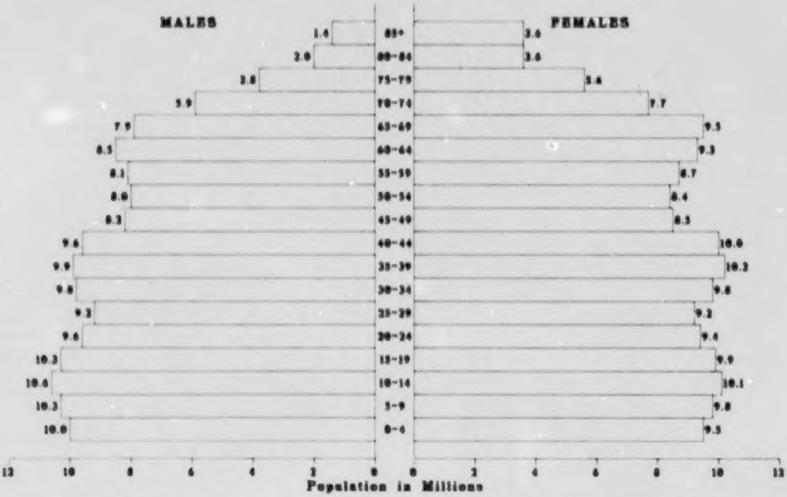
Source: U.S. Bureau of the Census

Total U.S. Population by Age and Sex:
Middle Series Projections to July 1, 2000



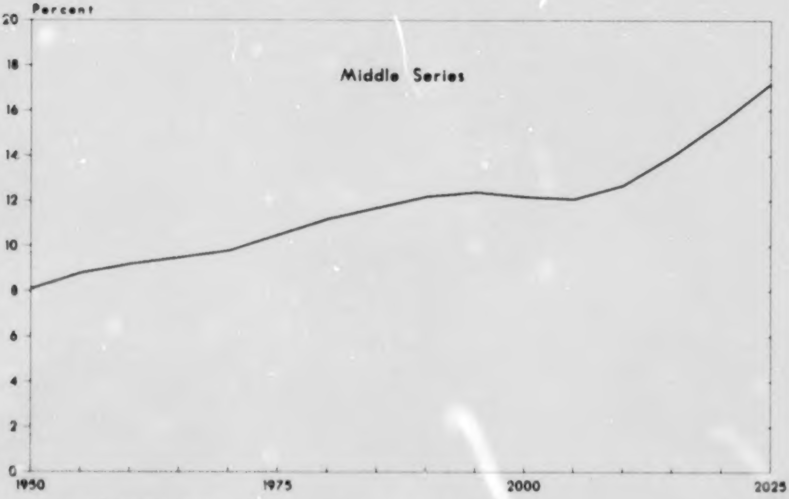
Source: U.S. Bureau of the Census

Total U.S. Population by Age and Sex:
Middle Series Projections to July 1, 2025



Source: U.S. Bureau of the Census

Estimates and Projections of the Percentage of U.S. Population 65 Years and Over: 1950 - 2025



Source: U.S. Bureau of the Census

U.S. DEPARTMENT OF COMMERCE
Bureau of the Census
Statement of
Paul C. Glick
Senior Demographer
Before the
Select Committee on Population
U.S. House of Representatives
May 23, 1978

THE FUTURE OF THE AMERICAN FAMILY

Slowdown in population change. A reasonable expectation is that further changes in American family life will significantly lessen during the next two decades. This position is supported by related conclusions that were reached in a monograph, The Population of the United States, Trends and Prospects: 1950 to 1990, that was prepared by staff members of the Census Bureau's Population Division as background material for the World Population Conference in Bucharest, Romania, in 1974. In that monograph, even the high projected rates of change in population growth, school enrollment, and the labor force during the 20 years between 1970 and 1990 are consistently smaller than the corresponding rates of change that had already taken place during the 20 years between 1950 and 1970.

The prospect of such a slowdown in social change could turn out to be seriously in error, particularly if some unforeseen change of great consequence should develop in the meantime. But several aspects of the present situation are at least consistent with an outlook of less change ahead.

In the first place, the decline in the birth rate during the last two decades has provided much momentum to a wide variety of other changes, as will be demonstrated in later sections. The relevant fact here is that this decline has gone about as far as it can go, and most demographers do not expect it to rise very significantly in the next decade or two.

In the second place, the great amount of increase in school and college enrollment during the last two decades has influenced other changes but is most unlikely to be repeated again in the next couple of decades. The proportion of young people who graduate from high school has been on a plateau of about 85 percent during the 1970's. The proportion of men in their late twenties who have completed a year or more of college after graduating from high school has reached 60 percent, and the comparable proportion of women has approached close to 50 percent; these levels are 10 or more percentage points higher than a decade ago and seem unlikely to rise by a similar amount during the next decade.

In the third place, the recent rate of increase in the proportion of women in the labor force has been dramatic, going up from 38 percent in 1960 to 48 percent in 1977. Without a continuing decline in the birth rate and with less increase in the educational level of the young adult population, along with other changes not mentioned, the odds seem to favor a slackening of the rate of increase in the labor force participation of women over the next decade or two. The worker rate for men has been declining for several years; this trend may diminish or be slightly reversed in future years by the lifting of the mandatory retirement age and by the easing of entry into the labor force by young men (and women) a decade or two from now because of the relatively small size of the cohorts that will be seeking to be absorbed into the labor market at that time.

These slackening changes in the birth rate, the enrollment rate, and the labor force participation rate seem likely to have a dampening impact on patterns of future change in family life.

Changes in the family life cycle. Longtime trends in demographic variables that are used to study the family life cycle have been primarily affected by downward trends in the birth and death rates. This conclusion was reached by Glick (1977) on the basis of an analysis of changes over the 80-year period from the early 1900's through the 1970's.

Aside from the baby boom after World War II, the birth rate has followed a generally downward direction until the present time. The average family that was formed in the early years of the 20th century included four children, whereas the average family formed in the 1930's included three children. Families formed during the familistic era of the 1950's had one additional child, but those forming at the present time expect to have only two children, on the average.

Today's young family of two children stands in sharp contrast with their great-grandparents' family of four children. Other things being equal (though they may not be), one would expect that the father and mother of today can spend more time with each of their children and with each other apart from their children. The period of childrearing has been shortened by about three years; and the period after the children leave home has been increased by 11 years (from 2 years to 13 years), largely as a consequence of the improvement in survival rates among adults.

Accordingly, young couples today can expect to live as a "childfree" twosome for about 14 more years than their elders, most of the increase coming in middle age and later. These 14 years represent nearly one-third of the entire 44 years of married life for the shrinking proportion of couples with continuous first marriages. The degree of satisfaction those later years bring depends on many tangible and intangible factors concerning how well the two relate to each other and to their grown children. (All but a few--between 5 and 10 percent--will have some children.) That satisfaction has a good chance of being affected by the rising status of women and the concomitant increase in singlehood and divorce. The extent to which young adults are postponing marriage and to which adults of all ages are dissolving their marriages in divorce will be treated in the next two sections of this statement.

Will the postponement of marriage continue? Persons in their twenties, when most of those who marry do so, are now postponing entry into their first marriage until they are about one and one-half years older than their counterparts two decades ago. Thus, in 1977 the median age at first marriage was 24.0 years for men and 21.6 years for women. In 1956 the median ages at marriage were the youngest on record: 22.5 years for men and 20.1 years for women.

Additional evidence of much more postponement of marriage now than formerly is provided by the increase of one-half between 1960 and 1977 in the proportion of women 20 to 24 years of age who had never married (from 28 percent in 1960 to 45 percent in 1977). During this period the same rate of increase was recorded in the postponement of marriage among women in their late twenties (from 10.5 percent to 16.1 percent).

One of the tangible factors that probably helps to explain the increasing postponement of marriage is the 5-to-10-percent excess of women as compared with men during recent years in those ages when most first marriages occur (18 to 24 years for women and 20 to 26 years for men). This imbalance is a consequence of past fluctuations in the birth rate. For example, women born in 1947 after the baby boom had begun were ready to marry in 20 years, but the men they were most likely to marry were born in 1944 or 1945 (about one-half in each year) when the birth rate was still low; these men were about 8 percent less numerous than the 20-year-old women. (By contrast, girls who were born during the last 15 years while the birth rate has been declining will be scarce as compared with eligible men when they reach the main ages for marriage.)

The longer the pattern of increasing postponement of marriage persists, the more likely the prospect becomes that the extent of lifetime singlehood among young adults of today will increase. As recently as 1940, about 9 percent of the women in middle age had never married. That proportion had dropped to only 4 percent by 1977; this all-time low rate of lifetime singlehood was experienced by a cohort that was in or near the peak years for marriage during the 1950's when the age at marriage was low and when the marriage and birth rates were high. Unless women now in their twenties have an unusually large amount of late marriage, the chances are that 6 percent--or even 7 or 8 percent--of them will go through life without ever becoming married. These projected rates may seem to be relatively small, but in reality they amount to half again up to twice as large a proportion as that experienced by those 20 years older.

The marriage and divorce rates have stabilized; will they remain stable? As the young people born during the baby boom became of age to marry, the marriage rate increased until it reached a peak of 11.0 per 1,000 population in 1972. From that level it declined to 10.0 in 1975 and has fluctuated very little since then. ("Annual rates" for the 12 months ending in a given month have fluctuated between 9.9 and 10.1; the rate for 1976 as a whole was 9.9, and for 1977 it was 10.1.) On the other hand, the divorce rate continued its historic rise until it reached a peak of 5.1 per 1,000 population in 1977. Now for nearly two years (from April 1976 through January 1978) the divorce rate (for the 12 months ending in a given month) has been virtually unchanged. (It rose to 5.1 in only 3 of the 22 months; it was 5.1 for 1977 as a whole, but it was 5.0 in every month of 1977 except December, and it fell sharply to 4.4 in January 1978.)

The future propensity of young adults to marry cannot be forecast with a great degree of confidence. Nevertheless, there are reasons to expect the proportion of young adults who marry to level off or to rise moderately for a few years and then to rise still more after that time.

If the marriage propensity tends to stabilize or to rise moderately during the next few years, one of the reasons will probably be little further change in the postponement of first marriage, and another may be an increase in the number of late first marriages among those who have been postponing them. Still another reason may be a discontinuation of the pronounced decline in the remarriage rate that was observed between 1972 and 1975--the latest period for which data are available. The developments would likely be stimulated if the outlook for the improvement in business conditions and in the employment of young adults were to be generally favorable. These developments would likely be hampered, however, if the outlook continues to be clouded by high levels of inflation and by high rates of unemployment among the millions of young persons who were born during the baby boom.

If the focus is on the more remote period of one or two decades from now, the prospects for an increasing proportion of young adults to marry should be better because of the greater ease with which the labor market should be able to absorb the relatively small cohort of young adults at that time. Of course, changes in the sizes of age groups during successive stages of the life cycle and simultaneous changes in employment conditions are not the only critical variables affecting the level of the marriage rate, but they are surely two of the most important variables.

The future course of the divorce rate is also difficult to forecast. But to the extent that the level of divorce is related to the level of marriage, the prospect for divorce to decline somewhat in the next few years seems reasonable. This conclusion rests on the fact that divorce tends to occur a few years after marriage and that the peak in marriage was reached in 1972, whereas the current high level of divorce was reached about 2 years ago. The lag between marriage and divorce is as follows: half of the divorces after first marriage occur during the first 7 years after marriage, and half of the divorces after remarriage occur during the first 3 years. The marriage rate has fallen now about one-tenth from its highest level, therefore, it should not be surprising if the divorce rate should also fall somewhat during the next year or two. Thereafter, fluctuations in the divorce rate might be expected to occur in a pattern similar to future fluctuations in the marriage rates of about 4 to 6 years earlier, if the divorce level has essentially stabilized.

A rise in the divorce rate during the last decade has occurred among couples of all ages, but by far the greatest age-specific rate of increase has taken place among couples in the range of 25 to 39 years of age--the range within which three-fifths of all divorces occur. Between 1968 and 1975, the divorce rate per 1,000 married persons went up 70 percent for those 25 to 39, as compared with 50 percent for those under 25 and those 40 to 64 years old; it went up 35 percent among those 65 and over. These findings appear to contradict the impression among many counselors of persons with marital stress problems, namely, that the greatest increase has been among persons in middle age. Those counselors' impressions may actually be correct in the sense that there may have been a disproportionately large rate of increase among the clients in middle age who seek the services of marriage and divorce counselors; persons in this age range are most likely to be sufficiently affluent to afford such services and are also most likely to have complex property settlements to consider.

Despite a threefold increase since 1960 in the number of children of divorced parents who live with a divorced father, the proportion of children living with a divorced father has not changed very much; it has remained at the level of about one-tenth of all children who live with a divorced parent. The reason for this finding is that there has also been a threefold increase since 1960 in the number of children who live with a divorced mother.

What is the outlook for change among one-parent families? Despite substantial increases in divorce and informal living arrangements during the last couple of decades, the preponderant majority of people still live in households maintained by a nuclear family. Specifically, seven of every eight of the 213 million persons in the noninstitutional population of the United States in 1977 were residents of nuclear family households:

77 percent were in husband-wife households; and
10 percent were in one-parent households; thus,
87 percent were in nuclear family households.

7 percent were living alone as 1-person households;
1 percent were in households of unmarried couples; and
5 percent were in various other living arrangements.

100 percent. (In 1970, 1 percent of all persons were in institutions.)

That is the big picture. One feature of it that may be particularly surprising is the smallness of the proportion of persons living in the households of one-parent families. An obvious reason is that such families include only one parent instead of two. Another is that only 54 percent of all families have any "own" children under 18 years of age in the household. In fact, 18 percent of the 64 million noninstitutional children of this age in 1977 were living in one-parent families.

79 percent of all children under 18 lived with two parents;
18 (17.7) percent lived with one parent; and
3 percent lived with neither parent, but usually with relatives.

100 percent. (In 1970, 0.4 percent of all children were in institutions.)

But some of the 79 percent of children under 18 in 1977 living with two parents were living with a stepparent or were born to their current two parents after one or both had remarried.

66 percent lived with both natural parents in their first marriage;
5 percent lived with both natural parents but one or both had remarried; thus,
71 percent lived with both of their natural parents.

8 percent lived with a stepparent (i.e., were born before the natural parent they live with had remarried).
79 percent (see above). (This includes some adopted children, not separately identified.)

The 18 percent of children who lived in one-parent families in 1977 were very unevenly distributed among parents by marital status and race. They also represent a doubling of the corresponding proportion in 1960 (up from 9 to 18 percent). (In absolute numbers, the increase amounted to a rise from 7.1 million in 1960 to 11.3 million in 1977.)

Sex and marital status of parent	Percent of children under 18 living with one parent		
	All races	White	Black
Total, 1977	17.7	13.3	43.2
Living with--			
Mother only	16.3	11.9	41.7
Father only	1.4	1.4	1.4
Marital status of parent:			
Divorced	7.2	6.7	9.9
Married	5.9	4.0	17.5
Separated	5.0	3.2	15.9
Widowed	2.4	1.9	5.0
Single	2.2	0.6	10.7
Total, 1970	13.4	10.3	31.5
Total, 1960	9.1	7.1	21.7

Information from the same sources as the accompanying exhibit shows that the number of children under 18 years old rose from 64.3 million in 1960 to 69.5 million in 1970 and then, because of the declining birth rate, it fell to 64.1 million in 1977. Thus, the total number of young children in 1977 was about the same as in 1960, but in the meantime the number living with a separated parent doubled; the number living with a divorced parent tripled; and the number living with a never-married parent became seven times as high. By contrast, the number of children living with two parents actually declined by 10 percent (from 56.3 million in 1960 to 50.8 million in 1977), and the number living with a widowed parent declined 20 percent (from 1.5 million to 1.2 million).

On balance, there are still close to four of every five young children living with two parents and most of the rest living with one parent. Even so, this situation is significantly different from that in 1960 when seven of every eight lived with two parents--more often their own natural parents then than now.

Most people would probably agree that the most desirable situation is for children to live with two relatively harmonious parents. The Census Bureau cannot demonstrate whether most of the decline since 1970 in the number of children living with two parents has occurred among those whose parents were not very harmonious, but it can demonstrate that about five-sixths of that decline has occurred among children whose parents were not high school graduates. (Data presented here are for children whose parents were under 45 years old.) Meantime, three-fourths of the increase among children living with their mother only has occurred among those whose mothers were high school graduates or who had completed some college training. In fact, the number of children in one-parent families whose mother was a college graduate doubled between 1970 and 1977 (from 148,000 to 351,000); whereas the number of children in two-parent families whose father was a college graduate increased by only 1 percent (from 7.5 million to 7.6 million). (Data for 1977 are not available on the educational level of the mother in two-parent families.)

Despite the substantial increase among children in one-parent families where the parent has graduated from high school (and is therefore most likely to be self-maintaining), the fact remains that nearly one-half of the children in one-parent families live with a parent who has never completed high school. This proportion is about twice as large as that for two-parent families. Thus, the pattern of change with respect to one-parent families is mixed and may be expected to continue to be that way. Young mothers who are economically independent and who choose to live at least for a while in the unmarried state may be expected to go on increasing in numbers. At the same time, the number of poorly educated mothers who are reported as living apart from the father of their children may be expected to continue to account for a small proportion of the increase in one-parent families; that proportion was one-fourth between 1970 and 1977. But there is reason to believe that some of these poorly educated and impoverished mothers with no husband reported as living in the home may actually have had a husband present who was not so reported because of such reasons as the consequences on their eligibility for welfare benefits. A closely related finding is as follows: the proportion of Black families reported as maintained by a woman in 1977 (37 percent) was much larger than that for White families (11 percent). Making use of estimates of undercounting in the 1970 census and relevant assumptions, the author reached the conclusion that probably one-fourth to one-third of the difference between the proportion of Black families and White families reported as maintained by a woman could be explained by the much larger undercount of Black men than that for White men (Glick and Mills, in press).

Where do the noncustodial parents and other unmarried persons live? To a large extent, the counterpart of one-parent families consists of *young* separated and divorced persons who live apart from their spouse (or exspouse) and their children, if any. These persons have contributed heavily to the rapid increase during the 1970's in the number of young adults who were living alone. The number of 1-person households maintained by adults under 35 years of age increased by 45 percent between 1970 and 1977, well above the rate of increase for any other age group. About one-fourth of these young adults living alone in 1977 were separated or divorced, a substantial majority of whom were men. Most of the remainder were never-married persons living alone, many of whom would have been married if it had not been for the recent increase in the postponement of marriage.

Besides the one-fourth of young noncustodial parents who live alone, a somewhat larger proportion live in a family setting, usually with their parents. This living arrangement is much more typical of separated than divorced persons. Most of the remainder live in with nonrelatives or share their living quarters with nonrelatives.

Unmarried couples of opposite sex account for a numerically small but rapidly increasing type of living arrangement. Nearly 2 million adults in 1977 were sharing their living quarters with only one other unmarried adult, consisting of a man with a woman living in (606,000 men and 606,000 women) or consisting of a woman with a man living in (351,000 women and 351,000 men). These 1.9 million adults constituted an 83-percent increase over their 523,000 counterparts in 1970 (Glick and Norton, 1977).

Most of these adults are relatively young (three-fourths being under 45 years of age), but one-tenth include a man or a woman 65 years old or older. An estimated 3.6 percent of all unmarried adults and 8.3 percent of the divorced men under 35 in 1977 were involved in an unmarried couple lifestyle. Of all the one-parent families, about 3 or 4 percent included an unmarried couple. Unmarried couples were more likely to consist of a man and a woman neither of whom had graduated from high school or both of whom had an incomplete college education than would be expected if they were randomly distributed among all couples.

Although only 2 percent of the "couple households" in the 1977 cross-section survey consisted of unmarried couples, some unknown additional proportion of young adults will adopt this lifestyle for at least a period of several months or have previously done so. In Sweden the current cross-section proportion comparable with the 2 percent for the United States is 15 percent. Whether the lifetime proportion for today's unmarried couples in this regard will rise from its present level of 2 percent to the 15-percent level is difficult to conjecture. Although the current trend is in that direction, it is probably too early to expect it to rise that high.

The family (in modified form) will go on. This statement has documented some of the substantial changes that have been occurring in regard to marriage, family size, and living arrangements and has offered some opinions about likely future changes in these aspects of family life.

In spite of the demonstrable delay in marriage, the decline in family size, the upturn in divorce, and the increasing diversity of living arrangements, the overwhelming majority of American people still live in nuclear families that include a married couple and/or a parent and one or more children. This assertion is not meant to minimize the extent of recent changes but to imply that the American people have been showing a great degree of resilience in coping with pressures that affect their family life and are likely to continue to do so.

The judgment presented here is that changes over the next two decades will be small as compared with those during the last two decades with respect to patterns of marriage, fertility, and related family behavior. Of course, the future changes in some respects, such as the living arrangements of unmarried young adults, may continue to change considerably in view of the recency of the sharp increase in the experimentation in this area.

Underlying many of the Nation's family problems during the 1960's and 1970's has been the difficulty of coping with the tremendous task of absorbing into the social system the massive number of young adults who were born during the period of high birth rates after World War II. High unemployment rates and inflated prices for consumer products and services must have also contributed to the increasing delay in marriage, the reduction in births, the evident difficulty of keeping marriages intact, and associated changes in the composition of households.

The delay in marriage should have the favorable side effect of expanding the range of social relations before marriage, thereby increasing the chances that a rational choice of a marriage partner will be made at a more mature age than formerly. Through a cumulative process, delayed marriage also generally means still further delayed childbearing. Research demonstrates that delaying childbearing is one factor associated with a smaller number of children and with fewer unwanted births (Westoff, 1978).

Obtaining no more than the desired number of children is now within the realm of possibility for most young adults through modern effective means of contraception. One of these means that has been adopted by a rapidly growing proportion of contraceptors is sterilization of the husband or the wife. This increasing use of sterilization deserves more attention than it has received as a means for promoting slow population growth in future years. As long as sterilization cannot be reversed, it will prevent those who adopt it from changing their minds about having additional children and contributing thereby to a new baby boom. At the same time, lack of access to, or use of, effective contraception by sexually active adolescents continues to be a serious problem.

The advantages of having a large family in an agrarian economy no longer apply to the current American scene. In earlier times the mother of many children usually found her time fully occupied with household duties, but now half of the mothers (usually with only one, two, or possibly three young children) are using their high school or college education to gain employment outside the home. Once these mothers have overcome the obstacles to such employment, few of them are likely to forego the advantages, particularly those women with no children below school age. Two of the most needed supports for working parents are good quality day care for children below school age and the opportunity to work part time or on a flexible time schedule so that one parent can be at home while the children are not in school. One obvious way to provide more good quality day care for children would be to increase the use of persons trained to teach who find no jobs and to place them with the children in vacated school buildings, with costs shared by parents and the local government on the basis of the parent's ability to pay for this service. Such a program would become more feasible if it were supported by the necessary Federal funding.

Delaying marriage has been associated with an increase in the work experience of women who have never married. This experience makes women more employable as they enter marriage, and increasingly makes it possible for them to work on a continuous basis with a few weeks off for childbearing. The more employable they become and the fewer children they have as a partial consequence thereof, the more economically independent young mothers become and the more likely they are to seek a divorce if their marriage comes under serious stress.

Thus, the new options that have emerged during the last generation or two for women to become well-educated, to obtain employment outside the home, to limit the size of their family, and to end an unsatisfactory marriage in divorce, have created a setting in which an increase in divorce should not be very surprising. The new options have therefore come at a price. But the price is not too high insofar as it has made divorce a real alternative to a marriage that becomes a threat to the mental health and general well-being of persons who are directly involved.

During the last two decades social pressure has been diminishing on young adults to marry, to have children, and to stay married. During the next decade or two social pressure may also be expected to diminish for both a working mother and her husband to be employed on a full-time basis. Relaxation of pressures in these ways would be expected to increase the quality of the marriages that are initiated and of those that remain intact.

An appropriate closing to these thoughts about the future of the American family is the following sentence from President Carter's announcement of the forthcoming White House Conference on Families: "I am confident that the American family is basically sound and that we can and will adjust to the challenges of changing times."

REFERENCES

Glick, Paul C., "Updating the Life Cycle of the Family," Journal of Marriage and the Family, Vol. 39, No. 1, pp. 5-13.

______________, "Social Change and the American Family," The Social Welfare Forum, 1977, National Conference on Social Welfare, Columbia University Press, pp. 43-62.

Glick, Paul C., and Karen M. Mills, "Black Families: Marriage Patterns and Living Arrangements," in John D. Reid and Everett S. Lee, eds., The Population of American Blacks, Athens, Georgia: University of Georgia Press (in press).

Glick, Paul C., and Arthur J. Norton, "Marrying, Divorcing, and Living Together in the U.S. Today," Population Bulletin, Vol. 32, No. 5, Population Reference Bureau, Inc., Washington, D.C. (1977).

U.S. Bureau of the Census, Current Population Reports, Series P-20, No. 212, "Marital Status and Family Status: March 1970"; No. 218, "Household and Family Characteristics: March 1970"; No. 313, "Marital Status and Living Arrangements: March 1977"; and other census reports.

Westoff, Charles F., "Some Speculations on the Future of Marriage and Fertility," Family Planning Perspectives, Vol. 10, No. 2 (March/April 1978), pp. 79-83.

THE U.S. POPULATION'S CHANGING REGIONAL DISTRIBUTION: TRENDS AND IMPLICATIONS

(Testimony Before the House Select Committee on Population, May 23, 1978)

Peter A. Morrison

May 1978

P-6122

ABSTRACT

In an era of slow population growth, migration has become a powerful influence in determining which regions of the nation grow and which do not. In the metropolitan sector, population is shifting away from mature industrial subregions toward subregions in the South and West. In the nonmetropolitan sector, there has been a strong and pervasive revival in all subregions.

Among the specific concerns to result are:

- How many residents can a region claim as its own (which partly determines its share of federal aid)?
- What are migration's effects on a region's stock of skilled and educated workers, on the one hand, and needy dependents on the other?
- What is the impact of undocumented aliens in those few states and large metropolitan centers to which the majority of aliens make their way?
- What, if anything, can be done to ease the institutional agonies entailed in reversing an earlier process of expansion to accommodate the cessation of population growth?

Two general policy approaches are distinguished for dealing with the issues that migration poses:

1. Ameliorate the visible consequences of migration. Under this approach, policies would focus on assisting localities in dealing with the common problems that are imposed by regionwide growth and decline.

2. Federalize the redistribution of resources to complement the pattern of migratory redistribution. Acknowledging that some regions inevitably will gain and others lose in terms of the distinctive kinds of people that accumulate in places, this policy approach would transform such national problems as welfare dependency (which are disproportionately accumulated in certain regions) into national responsibilities.

THE U.S. POPULATION'S CHANGING REGIONAL DISTRIBUTION: TRENDS AND IMPLICATIONS

(Testimony Before the House Select Committee on Population, May 23, 1978)*

by

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I. INTRODUCTION

A transition to stability, or zero population growth, appears to be under way in the United States. It is evident, however, that even approaching ZPG will not eliminate the impact of rapid population growth in some places, and that certain others are destined to feel the effects of population decline well before the rest. This fact has profound implications for how the nation will experience the prolonged transition to stability.

Today, as never before, migration has the effect of restructuring political and fiscal relationships among and within regions. People with strong bonds to an area become aroused, understandably, when they perceive threats to its economic, social, and political interests.

The most basic kind of threat--and probably the most difficult to deal with--attaches to population change in a region, especially when the rate of change is accelerated. The more rapid alteration of the population disturbs social, economic, and political arrangements not only within regions but between them. The traditional power bases in the nation become reshuffled. Recent demographic changes in the Northeast, for example, illustrate how a regional shift in net migration in the context of an overall drop in the birthrate can halt population growth and weaken the political influence of an historically dominant region.

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My testimony focuses on current demographic change in regions of the United States. Specifically, I address the following questions:

1. How are national trends in fertility and internal migration being manifested in different regions?
2. What public concerns will follow in the wake of these trends?
3. What roles might public policy assume *vis-à-vis* these issues?

II. THE NATIONAL DEMOGRAPHIC CONTEXT

Massive demographic transformations that have been quietly under way for a decade have destabilized the social and economic status quo in a large number of places. A falloff in the birthrate, reversal of the historic trend in migration from rural to urban settings, and redirection of regional population movements have acted as a single force to alter the national landscape of growth and decline. Like wind drifting snow, they have created new features, obliterated old ones, and in some places exposed what lies beneath.

METROPOLITAN AREAS

The sharp decline in births has throttled back the rate of population growth nationally and in the process revealed migratory comings and goings as the principal determinant of local growth and decline in many places. Since 1970, 42 of the nation's 259 Standard Metropolitan Statistical Areas (SMSAs) have failed to register any significant population growth (Figure 1). This cessation of metropolitan growth is partly the result of the low birth rate, but is mostly due to the excess of departing migrants over arriving ones. As the cities' magnetism has waned, population has stopped growing or begun to decline--a situation often (but mistakenly) regarded as the prelude to economic stagnation--and has severely strained traditional mechanisms of municipal finance.

NONMETROPOLITAN AREAS

The counterpart of this trend toward metropolitan decline is the "rural renaissance"--the revival or acceleration of population growth in small cities and towns, including those that are remote from metropolitan areas. These small, once stable communities, are ill-equipped to deal with sudden population growth. Like new celebrities they lack the full array of legal and institutional structures for coping with unaccustomed attention.

Fig. 1

42 SMSAs WITHOUT GROWTH, 1970-1975

(OF 259 SMSAs DEFINED IN 1976)

SEATTLE EVERETT
TACOMA
DULUTH SUPERIOR
LAWTON
PINE BLUFF
SHERMAN DENISON
COLUMBUS
SAVANNAH

REGIONAL SHIFTS

The most complex facet of this demographic transformation--the redistribution of population among regions--has the most far-reaching implications. The changing directions of internal migration during the 1970s signal, and at the same time reinforce, new patterns in the regional distribution of economic vitality. These shifts are responsible for a variety of new regional conflicts of interest as well as for the new regional political coalitions whose power is just starting to be felt.

Demographic change has been a catalyst for larger political issues that have been quick to mature in a period of economic depression and energy shortages. The widely publicized regional shifts of population in this decade have given rise to the "Sunbelt" and the "Frostbelt" (not to mention other regions that the media have dubbed the "Welfare Belt," the "Brain Belt," the "Smog Belt," and so forth). Although the geographic boundaries of these regions are loosely defined at best, the interests and grievances they share are quite specific--and a grievance more often defines a region than a boundary.

This "tournament of the belts" is a kind of preliminary bout to the main event--the tension between growing and declining cities. Here the contending factions are made up of places--the Clevelands and Detroits, where growth has stopped; the Tucsons and Boulders and Petalumas, which, far from enjoying their growth, often see themselves as victimized by the access that migration confers on places.

The broad redirection of migration flows as measured in regional statistics, then, is most palpable at the local scale, especially where an earlier trend has been completely reversed.

III. NEW PATTERNS OF REGIONAL GROWTH AND DECLINE

Nationally, population growth is slowing, but the fortunes of different regions present a complex picture of growth and decline, with frequent marked breaks from past patterns. *The shift in migration, together with moderating natural increase, has determined where the symptoms of national decline first appear.*

The clearest illustration of this point is found by comparing the Northeast and the South (as defined by the Bureau of the Census). The contrasting developments in these two regions (shown in Fig. 2) demonstrate how recent shifts in net migration, together with the overall drop in the birthrate, have produced sharply diverging rates of population growth.

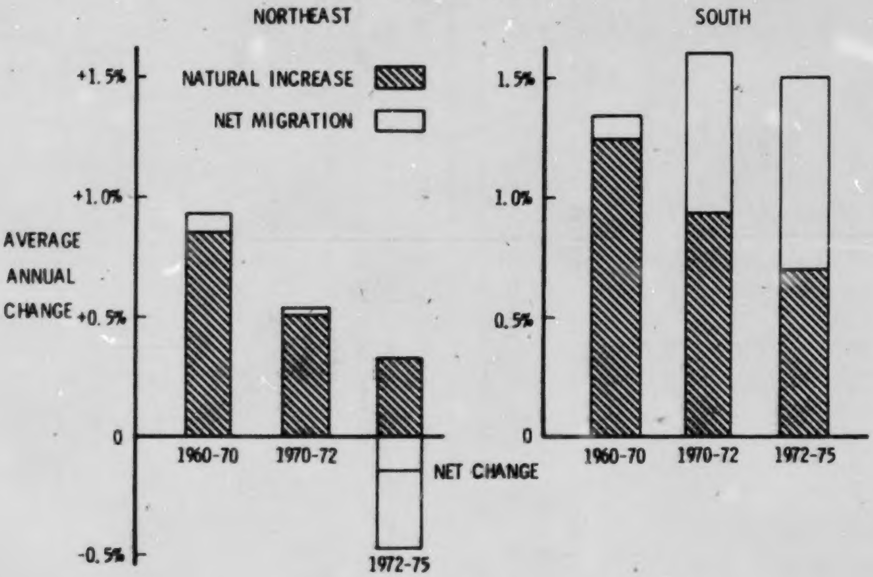
The heights of the bars in Fig. 2 show the average annual rate of population change in both regions for three recent time periods: the 1960s, the early 1970s, and the mid-1970s. Population change is divided into its two demographic components: natural increase (the excess of births over deaths) and net migration.

Notice that the rate of population growth has declined sharply in the Northeast but not in the South. The losses of the Northeast are due to both a downturn in net migration and the falloff in the birthrate. Prior to 1972, the Northeast had a nominal migration gain. After 1972, net migration reversed and turned into a sizeable rate of out-migration. The Northeast now registers negative change in population, because out-migration more than offsets the population's natural increase.

In the South, the population growth rate during the 1970s has not differed appreciably from that of the 1960s. What has changed, though, is the source of this growth: Notice that the net migration component is substantially greater than it was. In other words, a rising influx of newcomers has sustained the South's population growth as natural increase has waned. Although babies have become scarcer, the South has managed to attract migrants; the Northeast is running out of both.

Fig. 2

POPULATION CHANGES IN NORTHEAST AND SOUTH BEFORE AND AFTER 1970



All in all, the South isn't growing any faster than it did in the 1960s, and its lead over the Northeast isn't anything new--the South has been growing faster than the Northeast for at least fifteen years. But the South's margin over the Northeast today is due to migration, whereas in the 1960s it was due to natural increase; and that shift has altered the political complexion of the South.

The crux of interest, then, lies not so much in gross figures on the national population slowdown as in the political, economic, and cultural changes that regions undergo as migrants move among them.

Much of the nation's geographic diversity is concealed within these large regions. To elucidate these patterns, I have drawn upon recent unpublished data furnished by my colleague Calvin Beale of USDA's Economic Research Service. These data show the rates at which counties in each of 26 subregions of the nation are gaining or losing population through migration. These subregions divide the nation into 26 economically and culturally distinct groupings of counties. Blind to the often artificial boundaries that separate states, they reflect the administratively untidy economic and cultural geography of the nation.

Data at this subregional scale enable me to draw attention to two principal points I want to make:

1. *Migration continues to support metropolitan growth in the 1970s, although the locus of this growth has shifted away from much of the Northeast and Midwest.*
2. *Nonmetropolitan settlement patterns everywhere have evolved beyond the point where nearness to a metropolitan center is a prerequisite for local growth.*

As we have seen, the attractiveness of metropolitan areas nationally has weakened since 1970, and a growing number of individual areas have begun to decline. At the same time, there has been a strong revival of population growth in nonmetropolitan areas. Are these national shifts pervasive or are they more prevalent in some parts of the nation than in others?

THE METROPOLITAN SECTOR

The recent slowdown in metropolitan growth has been far from uniform in all sections of the country. Metropolitan population growth has halted in some sections of the country but accelerated in others by subregional population movements. National metropolitan growth, then, continues and is even accelerating in certain areas, although they are not the same areas as before.

This pattern is illustrated in Fig. 3, in which our focus is restricted to the metropolitan sector. This figure shows subregions where the metropolitan sector is losing migrants (vertical stripes) and gaining migrants (horizontal stripes) in the 1970s. The bolder patterns indicate that outflow or inflow has been initiated or intensified between this decade and the previous one--e.g., heavy vertical stripes signify a higher outflow rate during the 1970s than the 1960s or a shift to net out-migration following net in-migration during the 1960s.

Overall, *movements of population have brought metropolitan population growth to a halt in some sections of the country while accelerating it in others.* Metropolitan population in the Northeastern Metropolitan Belt (No. 2), for example, recorded net in-migration at 0.3 percent annually during the 1960s, but net out-migration at 0.4 percent annually thereafter. Metropolitan growth there has come to a decisive halt through a combination of out-migration and declining natural increase (as was noted above for the Northeast region as a whole).

Most of the Southern and Western subregions show the mirror-image of this pattern. There, net migration is adding to the metropolitan population, often at an accelerated rate since 1970. An impressive illustration is seen in the Rio Grande Subregion (No. 21), where annual net migration for metropolitan counties changed from -0.8 percent during the 1960s to +0.8 percent thereafter.

Overall, the geographic locus of migratory attraction (a barometer of economic opportunity) has shifted noticeably in the 1970s, and will to an extent perpetuate population and employment growth throughout much of the South and West.

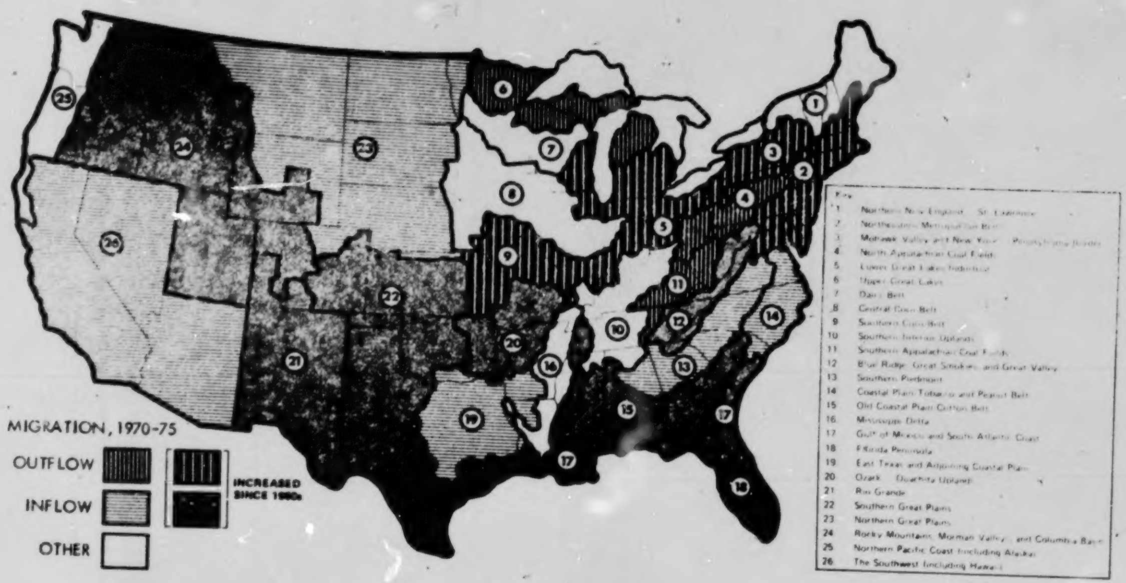

MIGRATION, 1970-75
OUTFLOW
INFLOW
OTHER
INCREASED SINCE 1960s
Key
1 Northern New England – St. Lawrence
2 Northeastern Metropolitan Belt
3 Mohawk Valley and New York – Pennsylvania Border
4 North Appalachian Coal Fields
5 Lower Great Lakes Industrial
6 Upper Great Lakes
7 Dairy Belt
8 Central Corn Belt
9 Southern Corn Belt
10 Southern Interior Uplands
11 Southern Appalachian Coal Fields
12 Blue Ridge, Great Smokies, and Great Valley
13 Southern Piedmont
14 Coastal Plain Tobacco and Peanut Belt
15 Old Coastal Plain Cotton Belt
16 Mississippi Delta
17 Gulf of Mexico and South Atlantic Coast
18 Florida Peninsula
19 East Texas and Adjoining Coastal Plain
20 Ozark – Ouachita Uplands
21 Rio Grande
22 Southern Great Plains
23 Northern Great Plains
24 Rocky Mountains, Mormon Valleys, and Columbia Basin
25 Northern Pacific Coast (including Alaska)
26 The Southwest (including Hawaii)
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Fig. 3--Metropolitan counties: the changing locus of migratory growth

THE NONMETROPOLITAN SECTOR

The changing economic fortunes of nonmetropolitan areas have manifested themselves diversely. Some sections of the nation stand out because preexisting growth has accelerated sharply. What is more often noteworthy, though, is simply the reversal of previous decline. Such changes--oftentimes dramatic--are evident when we compare a particular region's migration trends in the 1970s with those that prevailed in the 1960s.

The strong revival of nonmetropolitan population growth has been produced by a single change--reversal of the historic out-migration from the nonmetropolitan sector. In part, this increase reflects the traditional pattern of growth in the vicinity of metropolitan centers, but it also results from a new pattern of developing specialized activities (e.g., recreation and retirement) in areas located beyond the immediate sphere of metropolitan life. These quite different settings--the nonmetropolitan commutingsheds of metropolitan centers *vs.* more remote territory--have to be distinguished. We can do so by examining separately those nonmetropolitan counties that are adjacent to presently defined SMSAs *vs.* those which are not.

Figure 4 (restricted to the adjacent nonmetropolitan counties) focuses our attention on the portion of each subregion that is most susceptible to "metropolitan sprawl." Subregions are grouped according to several patterns of demographic change in this sector: the two darkest patterns show subregions that experienced migration outflow in the 1960s which ended in the 1970s. In some of these subregions--the heaviest stripes--that outflow has been so severe as to result in absolute population decrease (all that decrease of course has now ended). The second (represented in the lightest stripes) shows subregions that experienced net in-migration during 1960-1970, accelerated thereafter.

In these areas susceptible to "metropolitan sprawl," the reversal of previous out-migration clearly is pervasive. In most regions, then, there are clear signs that population is dispersing outward beyond the arbitrary boundaries of SMSAs. It is reasonable to infer that this "nonmetropolitan adjacent" sector has fallen much more heavily under

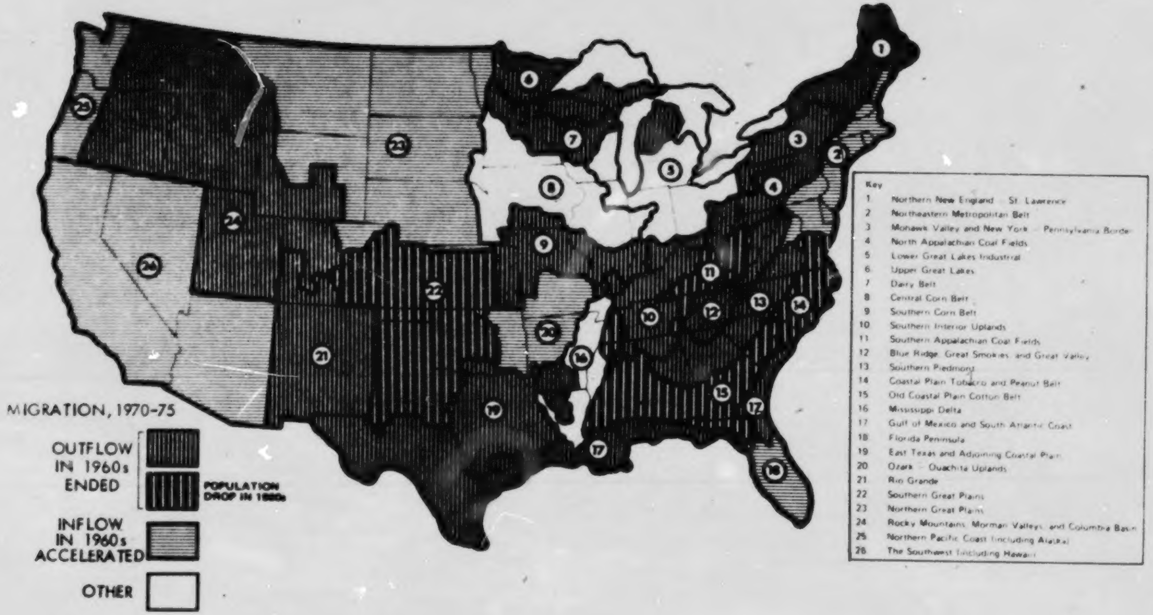
MIGRATION, 1970-75
OUTFLOW IN 1960s ENDED
POPULATION DROP IN 1920s
INFLOW IN 1960s ACCELERATED
OTHER
Key
1 Northern New England – St. Lawrence
2 Northeastern Metropolitan Belt
3 Mohawk Valley and New York – Pennsylvania Border
4 North Appalachian Coal Fields
5 Lower Great Lakes Industrial
6 Upper Great Lakes
7 Dairy Belt
8 Central Corn Belt
9 Southern Corn Belt
10 Southern Interior Uplands
11 Southern Appalachian Coal Fields
12 Blue Ridge, Great Smokies, and Great Valley
13 Southern Piedmont
14 Coastal Plain Tobacco and Peanut Belt
15 Old Coastal Plain Cotton Belt
16 Mississippi Delta
17 Gulf of Mexico and South Atlantic Coast
18 Florida Peninsula
19 East Texas and Adjoining Coastal Plain
20 Ozark – Ouachita Uplands
21 Rio Grande
22 Southern Great Plains
23 Northern Great Plains
24 Rocky Mountains, Morman Valleys, and Columbia Basin
25 Northern Pacific Coast (including Alaska)
26 The Southwest (including Hawaii)

Fig. 4 --Nonmetropolitan counties (adjacent): the reversal of population loss

the sway of metropolitan influence in the 1970s than before--and in virtually every section of the country.

Figure 5 highlights trends in the nonadjacent sector, where developments under way presumably are less closely tied to the national metropolitan economy. (Such counties by no means lack sizable urban centers, but by definition such centers are below the minimum 50,000 population threshold that qualifies an urban county as a metropolitan one. In all cases, however, these smaller cities and towns are a considerable distance from any metropolitan area.)

The pattern of change shown here closely resembles that for the adjacent sector, and often with more intensity. In the 1960s, these remote areas were losing migrants in all but a few subregions, and that loss was severe enough to incur absolute population decline in fully 10 of them. Yet, by the 1970s, that outflow had ended virtually everywhere, eradicating the decline of the past. Only one subregion failed to register any growth in this sector.

The Southern Appalachian Coal Fields (No. 11) is an exemplary case: The annual net migration rate for this sector shifted from a 2.6-percent outflow during the 1960s to a 0.8 percent inflow during the 1970s; and the population, which had been declining by 1.3 percent annually, began increasing by about 1.6 percent.

The heavily industrialized subregions also have registered noticeable improvement in this sector. The Northeastern Metropolitan Belt (No. 2), where growth of the *metropolitan* population halted in the 1970s, is registering better than a 1.7-percent annual increase in the "nonmetropolitan nonadjacent" sector--considerably above that for the 1960s. Much of this increase reflects formation and growth of small communities which appear to be prospering despite the larger trend of metropolitan no-growth.

In their remote areas, then, the overall fortunes of particular regions vary considerably. But the degree and pervasiveness of these areas' magnetism are especially noteworthy. All in all, metropolitan expansion is being supplemented by self-contained urbanization even in remote reaches of nonmetropolitan Am rica.

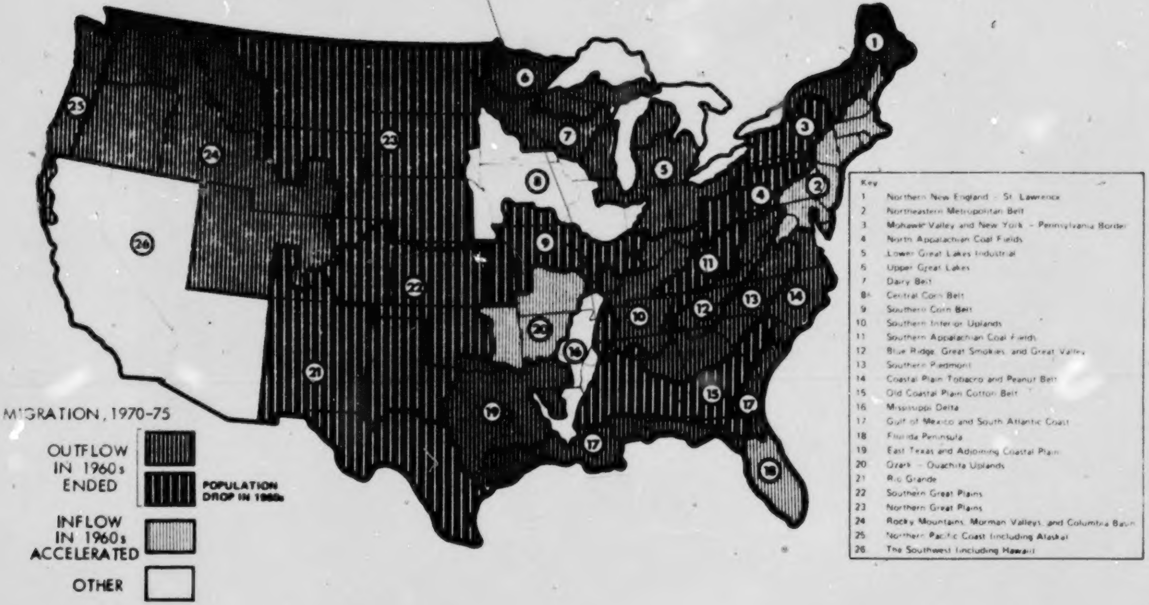
MIGRATION, 1970-75
OUTFLOW IN 1960s ENDED
POPULATION DROP IN 1960s
INFLOW IN 1960s ACCELERATED
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Fig. 5--Nonmetropolitan counties (nonadjacent): the reversal of population loss

Clearly, the pattern of U.S. settlement has evolved beyond the point where nearness to a metropolis is a prerequisite to local migratory growth. The cultures of city slicker and country bumpkin have merged--with an assist from television and the federal highway program--and Safeways, Sears, and Sizzlers have diffused down the urban heirarchy to serve even small and remote settlements.

IV. PUBLIC CONCERNS AND REGIONAL POPULATION SHIFTS

In almost every place in the United States, the population is continuously recomposed by a gradual procession of migrants coming and going, for the most part deliberately. That element of deliberate choice in most moves sharply differentiates population growth by net migration from growth by natural increase and, more important, it differentiates the *places* that are being affected. A place that grows by net migration of 1,000 has gained a thousand people who are there because they *want* to be *there*, and a place that loses 1,000 migrants has lost a thousand people who *don't* want to be there. Natural increase does not contribute deliberate residents; it only adds to population by lottery.

The purposefulness of migration makes it a largely autonomous process and one that, at least in the United States, is indicative of opportunity seeking. The view that personal success is achievable as readily outside as inside one's native region is a distinctive and deeply ingrained element of the American culture. It is the product of the persistent vacuum pull of economic opportunities in other places, which enables individuals alert to opportunity to explcit newly developed resources or knowledge quickly. *The American economy benefits from the readiness of its population to migrate: Without a tradition of migration, which moves people from areas where jobs are dwindling to places where workers are needed, U.S. economic development would be sluggish and less efficient than it actually has been.*

As this American predilection to migrate fosters rearrangement of population in space to answer the changing needs of the national economy, it also restructures regional political interests. These changes have been exposed in the new regional alliances--the Coalition of Northeast Governors, the Southern Growth Policies Board, and others--and will become more apparent in 1982 with Congressional reapportionment. The shifts also are posing common kinds of problems in specific places:

1. *Head-count concerns.* When federal largesse is distributed among localities and regions--in such forms as revenue sharing, community assistance, vocational education, LEAA funding to states, and the like--the formulas for distributing it typically give weight to the number of people the area claims as its inhabitants. Regions unable to boast more bodies (or, worse, to claim even as many as they had last year) will lose funds, even though they may deserve *more* federal assistance for that very reason.

This point has not been lost on cities and regions with shrinking populations, and they are pressing now for revisions of these formulas that will direct federal dollars to areas that are losing population. But if a formula that compensates areas for population growth is politically unpalatable, one that gives dollar credits for population loss may be equally offensive. The image arises of an urban "black hole"--a once great city into which an unending stream of federal dollars disappears as its population vanishes.

2. *Labor force quality concerns.* In recomposing a region's population, net migration may alter its labor pool, replenishing or depleting its stock of human capital. Skilled workers may depart from an area, to be replaced by less skilled in-migrants; young adults educated at one region's expense may move themselves, and that investment, to another.

3. *Concerns about dependency.* Some segments of the population (e.g., those on public assistance) are recognizably a public burden, and others (e.g., uneducated rural-to-urban migrants) are thought to be. Their accumulation in a place (whether through in-migration on their own part or through out-migration by other people) can scarcely be a matter for local indifference because of the real or perceived costs they impose.

4. *Concern over undocumented aliens.* This issue figures prominently in California, Texas, New York, and a few other states to which many aliens make their way. Illegal aliens used to stay close to the border, often in rural areas; but substantial numbers of them are now scattered throughout the nation. There is much disagreement about what effects they have: Some observers insist that alien Mexican

workers take jobs that unemployed Americans or legal migrants could have filled, and that illegal aliens overburden social services of all kinds, taking more in the form of social welfare services than they contribute in taxes. Although evidence is scarce, these allegations have nevertheless gained wide currency.

5. *Local "shrinking pains."* Newly declining areas are discovering that decline is not a graceful process. "Shrinking pains" have become commonplace, and not just in central cities. Nationwide, about one-sixth of all metropolitan areas are losing population, and one-third of metropolitan residents live in these areas of population decline. For central cities, especially large ones and those in the Northeast, the problems are far worse.

These nongrowing areas will continue to face problems of residential and productive obsolescence--most notably, vacant and abandoned housing, underused schools, outmoded public facilities, and an aging inventory of stores, offices, and factories. Selective out-migration will add to the burden of dependency that elderly and low-income citizens impose on a locality by lingering on after younger and more mobile people have left. These forces will worsen the fiscal situation of declining jurisdictions in an obvious fashion: Tax bases will shrink, while service demands may even grow.

6. *Newly experienced growth.* While some areas resent the problems that migrants generate when they leave, other areas equally resent the problems that arriving migrants cause: congestion, sprawl, and support costs. Local officials often feel frustrated at their inability to dampen the external forces that attract migrants. They have therefore attempted to deal with the effects, instead, by:

- Instituting local population ceiling ordinances, as in Boulder, Colorado, Petaluma, California, and elsewhere;
- Proposing federal legislation to control the influx of migrants, as the Governor of Hawaii did last year;
- Attempting to withdraw unilaterally from federal welfare programs, as in Plumas County, California.

V. POSSIBLE ROLES FOR PUBLIC POLICY

In an era of slowed population growth nationally, the ebb and flow of migration will figure prominently in both the fortunes of particular regions and the public debate about regional change. Pressures are likely to build for two broad types of legislative action: (1) actions to ameliorate the more visible *consequences* of migration by, for example, assisting localities in dealing with the common problems that are imposed by regionwide decline and growth; (2) actions to federalize the redistribution of *resources* to complement demographic patterns by, for example, federalizing welfare and health care responsibilities.

Ameliorating the local consequences of migration would respond to the factionalism engendered by the highly visible effects of local population change. Many of the large urban centers in the Northeastern Metropolitan Belt, for example, face the prospect of continued out-migration and its ensuing shrinking pains--a withering tax base without a corresponding reduction in demands for public services, and the need to manage excess housing and underused facilities. These common concerns that follow in the wake of urban ZPG might be addressed by policies that promote an orderly thinning out and reduction of excess capacity.

The newly growing nonmetropolitan sector is experiencing sharply increased demands for public services. The kinds of services demanded will vary with the age composition of in-migrants: Younger couples create demands for more schools; older in-migrants enlarge the demand for health services, now or in future years.

Federalizing the redistribution of resources to complement demographic patterns would acknowledge the inevitability that some regions will gain and others will lose in terms of the distinctive kinds of people that accumulate in places. From the national perspective, internal migration is largely a zero-sum game. Out-migration may relieve Mississippi of its poor, but these same out-migrants will appear as poor in-migrants somewhere else (although their poverty may cease there). Likewise, physicians trained at Boston's expense may remove themselves (and Massachusetts' considerable human capital investment) to Florida. Acknowledging these facts of life, this second policy approach would be to transform such national problems as welfare dependency (which are disproportionately accumulated in some parts of the country) into national responsibilities.

These approaches do not define policy; instead, they express ways to view regional change and to devise organizational responses to the problems that change engenders. The choice of which policy stance should be taken depends on one's convictions about the proper role of the public sector; on what one believes policy has in its power to do; and on the extent to which these processes of change themselves can be harnessed toward deliberate ends.

NEW YORK STATE'S TRANSITION TO STABILITY: THE DEMOGRAPHIC OUTLOOK

Peter A. Morrison

January 1977

P-5794

SUMMARY

The population of New York State is in transition from steady growth to near stability. This paper distills the basic information on current population trends in the state and highlights economic and social problems that those trends are likely to create.

The major features of population change in New York are: (1) an end to metropolitan growth statewide and the onset of decline in four of the state's ten Standard Metropolitan Statistical Areas, (2) a revival or intensification of growth in selected nonmetropolitan areas of the state, and (3) wide variations in the rate of population change for different age groups. These three demographic shifts will produce certain strains, some of which can be gauged with precision while others can only be guessed at.

Changes in the distribution of population between metropolitan and nonmetropolitan sectors are likely to require new fiscal and political accommodations at the local level. There will be fewer children to be educated, for example, but more elderly persons to be served.

The effects of different rates of growth for different age groups (which reflect past fluctuations in fertility) can be projected ahead with some confidence. These projections give timely notice of circumstances built into the population's structure that will affect school and college enrollments and the demand for particular kinds of dwelling units suited to specific age groups. The changing distribution of the elderly population among New York State's counties is examined in detail.

Two widely held beliefs about migration are examined--one that low-income migrants go to places like New York City as welfare seekers, the other that rural-urban migration does nothing more than transplant rural poverty to an urban setting. Both beliefs, according to evidence from recent research, are erroneous.

State policy could be limited to reacting; or it could strive to advance broad purposes; or set its sights on the specific goals of some "master plan." Whatever policy stance is chosen, adaptation to New York State's forthcoming demographic changes will entail difficult choices of emphasis between often conflicting objectives. These choices are inherently political because they distribute costs and benefits unevenly among groups of people and jurisdictions.

NEW YORK STATE'S TRANSITION TO STABILITY: THE DEMOGRAPHIC OUTLOOK*

by

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I. INTRODUCTION

The population of New York State is in transition from steady growth to near stability. Following an 8.4 percent increase between 1960 and 1970, New York's population edged upward in the first year of the 1970s, then drifted downward between 1971 and 1974 and leveled off by 1975. In four of the state's ten Standard Metropolitan Statistical Areas (SMSAs), however, the pattern of no growth seems well established.

The end to metropolitan growth in the state reflects, in addition to the overall slowdown in growth statewide, a change in the distribution of population between metropolitan and nonmetropolitan sectors within the state--a trend also evident throughout the country. Although New York's major metropolitan centers have ceased growing, its *non*metropolitan areas have registered population increase and, in some instances, dramatic growth, reversing a past trend of decline.

A primary consequence of these changing population trends is that many localities will have to make new fiscal and political accommodations to deal with the different demands imposed by a nongrowing population or by a suddenly growing one. In newly stable areas, old ways of financing new needs prove awkward, for the transition to no growth passes through a period of adjustment during which revenues may level off as demands for services continue to rise. Conversely, in areas of sudden population growth, revenue increases will lag behind the rapid rise in demand for services. All around the state, growing political jurisdictions will be enlarging their tax base at the expense of shrinking areas, but because of the lags in revenue adjustment, the population in both kinds of places will feel ill-served until new arrangements can be effected.

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*Paper prepared for a conference on "Planning for Change: The Case of New York State," at the State University of New York at Binghamton, November 8-9, 1976.

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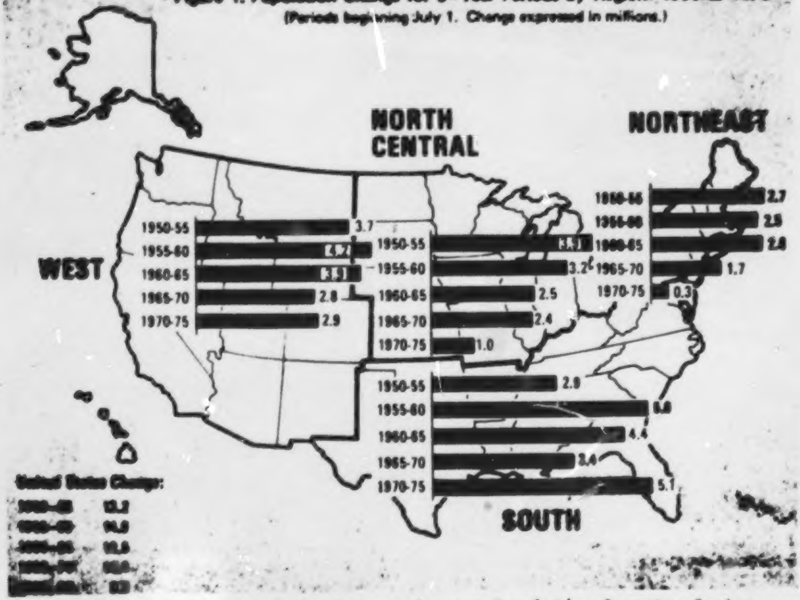
There is a common need for facts and analysis that can focus attention on issues associated with New York's transition to demographic stability and set the stage for public debate on what to do about them. That is my purpose here today: to distill the basic information on current population trends in the state and highlight economic and social problems that those trends are likely to create.

II. THE REGIONAL CONTEXT

The population shifts under way in New York State are, to no small degree, reflections of regional demographic changes taking place throughout much of the Northeast, particularly in the Middle Atlantic Census Division (New York, New Jersey, and Pennsylvania). This regional context, with its own peculiar but instructive pattern of demographic change resulting from the population's natural increase and net migration, is the starting point of our analysis. The context has three noteworthy aspects.

First, *population increase in the Northeast has very nearly come to a halt because of a decided change in regional population trends since 1970 as compared with previous periods* (see Fig. 1).

Figure 1. Population Change for 5-Year Periods by Region: 1950 to 1975
(Periods beginning July 1. Change expressed in millions.)



Source: U.S. Bureau of the Census, *Current Population Reports*, Series P-25, No. 640, November 1976.

Table 1

Population Change by Component for Each Region:
Five-Year Periods, 1950 to 1975

(In millions. Periods begin July 1)

Period	Natural increase					Net migration				
		Region					Region			
	United States	Northeast	North Central	South	West	United States	Northeast	North Central	South	West
1950-55	12.1	2.3	3.5	4.5	1.9	1.0	0.4	0.4	-1.6	1.9
1955-60	13.2	2.6	3.9	4.7	2.2	1.7	0.0	-0.7	0.3	2.0
1960-65	12.0	2.3	3.3	4.2	2.2	1.5	0.3	-0.8	0.3	1.7
1965-70	8.7	1.6	2.3	3.0	1.7	1.7	0.1	0.1	0.4	1.1
1970-75	6.8	1.0	1.8	2.5	1.5	2.5	-0.7	-0.8	2.6	1.4

Source: U.S. Bureau of the Census, *Current Population Reports*, Series P-25, No. 640, November 1976, table B.

New York and Rhode Island (and the District of Columbia) have experienced population declines between 1970 and 1975, and New Jersey and Pennsylvania have joined their ranks since 1972. The populations of two of the five other states in the Northeast (Massachusetts and Connecticut) are largely static; since 1972 they have increased by less than one-quarter percent annually.

Second, *population growth has been halted by the combination of a continuing drop in the birth rate and a shift in net migration, both manifested more acutely in the Northeast than elsewhere* (see Table 1). Natural increase (additions through births minus subtractions through deaths) has diminished everywhere, but more so in the Northeast than other regions since 1960. The Northeast's population gained 2.3 million through this component of demographic change between 1960 and 1965, but only 1.0 million between 1970 and 1975. Net migration (the numerical difference between arriving and departing migrants) has changed from nominal gains of several hundred thousand in preceding five-year periods to a sizable loss of 700,000 between 1970 and 1975. This regional migration loss has been more severe since 1972 and has afflicted the three Middle Atlantic states worse than those in New England.

Third, *in the 1970s, states with net out-migration appear to be diverging from those with net in-migration.* Comparing the first two years (1970-72) with the last three (1972-75) New York State's net migration changed from an annual average of -47,000 to -144,000; Pennsylvania's changed from -18,000 to -47,000; and New Jersey's from +26,000 to -32,000. In contrast, Texas's net migration rose from an annual average of roughly +55,000 to +95,000 and California's rose from +30,000 to +122,000. Interpretation of this divergence is complicated by the economic depression that prevailed during part of the period; it merits close attention in the coming years.

To summarize, there has been a decided change in the course that New York State's population is following in the mid-1970s. That change (and the demographic transformations bringing it about) has occurred mostly since 1972; it is common to much of the Northeast, especially the Middle Atlantic states; and it has been most acute in New York State.

III. PERSPECTIVES ON CHANGING FERTILITY AND MIGRATION

Population changes in any given area are the product of fertility rates, mortality rates, and migration rates (including immigration and emigration). Of these, fertility and migration have the greatest potential for producing large and relatively rapid changes in population.

Within the last decade, population growth in the United States as a whole has slowed considerably because of a sharp decline in fertility with no offsetting change in mortality. The most notable effect of this drop in fertility has been a transformation of the population's age structure which means, among other things, lower school enrollments and, eventually, larger social security payments. The fertility decline is being intensified or nullified in specific locales by new trends in migration. In some areas, population is not only growing more slowly than the national average, but actually declining because of out-migration; in other areas, population is growing rapidly despite lower fertility because of substantial in-migration. International migration (both legal and illegal) has also begun to have prominent local effects, especially in those few large metropolitan centers to which the majority of immigrants gravitate.

FERTILITY

Changes in fertility are perhaps most important in population analysis because they are a basic determinant of future changes in the size and composition of the population--changes which may have intense and long-lasting social, fiscal, and political effects. The contemporary trend in fertility reflects an interaction between the widespread use of more effective methods of contraception and changing attitudes toward childbearing:

- *Contraceptive practice has been modernized over the last ten years:* The increased use of highly reliable means of contraception, along with the availability of legal abortion as a backup method, has afforded couples virtually complete control over their fertility and reduced unwanted childbearing.

In 1973, 69 percent of married couples used one of the three most effective contraceptive methods--sterilization, the pill, or the IUD--compared with only 37 percent in 1965.*

- *There has been a major downward shift in fertility norms and an aversion to having large families, at least among young adults:* Nationally in 1975, almost 75 percent of married women 18 to 24 years old expected to have no more than two children, as contrasted with about 45 percent in 1967.**
- *There has been a postponement of childbearing among married couples:* The wife may have embarked on a career, or the couple has put off having their first child or additional children until their economic situation improves. The birth rate of course drops when childbearing is "rescheduled" in this way (and it can go back up equally fast when circumstances change).

The growth of New York State's population, as noted above, has been slowed in part by the decline in its birth rate, which paralleled the national fertility decline. The state's crude birth rate (number of births per thousand population) has fallen from 18.6 in 1965 to 13.0 in 1975. (The comparable national decline was from 19.4 to 14.2.) The direct consequence of declining births in New York is suggested by the following accounting of its demographic change from 1970 to 1975. The state's population decline of 122,000 was the product of 1,375,000 births, 958,000 deaths, and a net out-migration of 539,000. A decade before, New York had recorded some 1,750,000 births in a comparable period, 1960-65. As the birth rate has declined, public attention has begun to focus on *who* bears children today.

One reason for this new concern is that among very young teenagers, the birth rate is rising, and births to teenagers now figure more prominently among all births in this country (19 percent of the total in 1975 compared with 14 percent in 1960). Not only has the percentage

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*Charles F. Westoff, "Trends in Contraceptive Practice: 1965-1973," *Family Planning Perspectives*, Vol. 8, No. 2 (March/April 1976), pp. 54-57.

**U.S. Bureau of the Census, *Current Population Reports*, Series P-20, No. 288, January 1976.

of births to adolescents risen, but also the percentage of adolescents who bear a child out of wedlock has climbed sharply--not because of more out-of-wedlock conceptions, but because fewer teenage mothers are selecting marriage as a solution to an out-of-wedlock pregnancy.[*] "Kids with kids" impose considerable long-term costs on society, which several recent studies have highlighted.[**]

MIGRATION

Between 1970 and 1976, net migration away from New York State reduced its population by 640,000 (3.5 percent). That figure compares with a mere 101,000 loss (0.6 percent) during the entire decade of the 1960s. Since out-migrants tend to be in the prime working ages and more highly skilled and educated, New York State is losing not merely people but human capital as well. Since 1970, the state has been losing workers under age 30, whereas it formerly gained them at these ages. In another break with the past trend, black workers appear to be leaving New York State to go South in greater numbers now than they are arriving.[***] These and other findings (derived from an ongoing study by my discussant, John E. Smith), as well as the widely publicized "second war between the states"--a competitive battle among regions for jobs and workers--have focused public attention as never before on migration.[*]

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[*] Wendy H. Baldwin, "Adolescent Pregnancy and Childbearing--Growing Concerns for Americans," *Population Bulletin*, Vol. 31, No. 2 (Population Reference Bureau, Inc., Washington, D.C. 1976).

[**] For example, see various articles in *Family Planning Perspectives*, Vol. 8, No. 4 (July/August, 1976), special issue on teenagers; and Leslie A. Westoff, "Kids with Kids," *New York Times Magazine*, February 22, 1976, p. 14. Of special interest here is a study of first-time teenage mothers in New York City, reported in Harriet B. Presser, "Social Consequences of Teenage Childbearing," presented at the Conference on Research on the Consequences of Adolescent Pregnancy and Childbearing, Center for Population Research, National Institute of Child Health and Human Development, Bethesda, Md., October 29-30, 1975.

[***] John E. Smith and Michael J. Batutis, Jr., "Changing Growth Patterns: The Case of New York State," in George Sternlieb and James W. Hughes, *Post-Industrial America: Metropolitan Decline and Inter-Regional Job Shifts* (New Brunswick, N.J.: Rutgers Center for Urban Policy Research, 1975), pp. 139-157.

Migration trends, like fertility trends, have undergone significant change recently, but with local effects that are far more diverse. Now, as in the past, people continue to migrate for reasons that are connected with the workings of the national economic and social system. Migration moves people from areas where jobs are dwindling to places where workers are needed; without such adjustment, U.S. economic growth would be sluggish and less efficient than it actually has been. Migration is also an important vehicle of social mobility. Many people are prevented from bettering their circumstances less because of inherent personal limitations than because of rigidly drawn social barriers in their community. The generally positive experience of blacks who left the rural South, and of ethnic groups that left city ghettos, confirms the value of geographic mobility as a means of access to conditions that foster improvements in personal status.

Migration is a complex process, but as research increases our understanding of its operation, certain important misconceptions can be dispelled. One misconception concerns the motivation of low-income migrants to move to large cities. It is widely believed that such persons go to places like New York City as welfare seekers, drawn there by generous public-assistance allowances. A recent Rand Corporation study on this question reached a contrary conclusion: It found that needy newcomers start using the welfare system only gradually, not immediately; the delay is more easily interpreted as due to discouragement in finding work after the migrant arrives than to prior motivation for moving to New York deliberately to claim benefits.[**] Findings from other independent studies tend to corroborate this point.[***] The welfare-seeking migrant appears to be a myth; if anything, receipt of public assistance seems to *reduce* the migration of poor families, suggesting that welfare recipients tend to pile up in cities not because of in-migration but because of low out-migration.*

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[*] "The Second War Between the States," *Business Week*, May 17, 1976, pp. 92-114; and "Federal Spending: The North's Loss is the Sunbelt's Gain," *National Journal*, June 26, 1976, pp. 878-891.

[**] David M. DeFerranti, et al., *The Welfare and Nonwelfare Poor in New York City*, R-1381-NYC, The Rand Corporation, June 1974.

[***] Ostow and Dutka, for example, found that the median preacceptance residency period for welfare household heads who have migrated to New York City was three years, "...which suggests a failed

A related misconception (dispelled by a considerable body of research) is that rural-urban migration does nothing more than transplant rural poverty to an urban setting. It is true that rural-urban migrants have typically been more disadvantaged than their counterparts they have joined in the city, but they also stand out as being among the most successful of the city's residents at overcoming personal disadvantages. This is especially evident among black rural-urban migrants, who, in striving to better their economic positions, have equalled or surpassed the indigenous urban-born blacks they have joined.**

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attempt at self-maintenance rather than in-migration for the purpose of gaining prompt access to the state's liberal welfare system." Miriam Ostow and Anna B. Dutka, *Work and Welfare in New York City* (Baltimore: Johns Hopkins University Press, 1975), p. 76. See also: Larry H. Long, "Poverty Status and Receipt of Welfare Among Migrants and Nonmigrants in Large Cities," *American Sociological Review*, Vol. 39 (February 1974), pp. 46-56; I. N. Fisher and S. W. Purnell, *The Connection Between Migration and Welfare Dependency in the Chicago Metropolitan Area*, R-1388-IISP, The Rand Corporation, September 1973; Gordon F. DeJong and Zafar M. N. Ahmad, "Motivation for Migration of Welfare Clients," Working Paper No. 1975-01, Population Issues Research Office, Pennsylvania State University, n.d.; Robert D. Reischauer, "The Impact of the Welfare System on Black Migration and Marital Stability," unpublished Ph.D. Dissertation, Columbia University, 1971. Evidence on Puerto Rican migration, although less robust, also casts doubt on the role of welfare payments in attracting migrants. Specifically, welfare payments in the United States relative to Puerto Rico are not associated with the magnitude of migration from the island to the mainland. See Rita M. Maldonado, "Why Puerto Ricans Migrated to the United States in 1947-73," *Monthly Labor Review*, Vol. 99, No. 9 (September 1976), pp. 7-14.

*Larry H. Long and Lynne R. Heltman, "Do Welfare Payments Reduce Migration Potential?" paper presented at the annual meeting of the American Sociological Association, New York City, August 1976.

**The incidence of poverty, for example, is no higher among black rural-urban migrants than it is among the urban-origin blacks, according to a study referring to the mid-1960s. In fact, black migrants in the prime adult years (17 to 29) were much less likely to be poor than their urban counterparts. See Gladys K. Bowles, "A Profile of the Incidence of Poverty Among Rural-Urban Migrants and Comparative Populations," paper presented at the annual meeting of the Rural Sociological

Few of the problems facing blacks outside the South can be attributed directly to their rural Southern origin. The reverse may be true in regard to their economic success; it may be that the black rural-urban migrant brings to the city a more constructive set of attitudes toward school and work than those of the urban native he joins.[*]

Society, Washington, D.C., August 1970.

Other studies furnishing evidence on this point are reviewed in Peter A. Morrison, *Migration from Distressed Areas: Its Meaning for Regional Policy*, The Rand Corporation, R-1103-EDA/FF/NIH, October 1973. See also Larry H. Long and Lynne R. Heltman, "Income Differences Between Black and White Men Controlling for Education and Region of Birth," *American Journal of Sociology*, May 1975; Arvil V. Adams and Gilbert Nestel, "Interregional Migration, Education, and Poverty in the Urban Ghetto: Another Look at Black-White Earnings Differentials," *Review of Economics and Statistics*, May 1976, pp. 156-166; and Ann R. Miller, "The Black Migrant: Changing Origins, Changing Characteristics," conference paper dated October 1974, available from the W.E.B. DuBois Institute for the Study of the American Black, Atlanta University, Atlanta, Ga.

[*] Adams and Nestel, op. cit.

IV. SPATIAL MANIFESTATIONS: CHANGING FORTUNES OF METROPOLITAN AND NONMETROPOLITAN AREAS

Two major features of population change in New York are an end to metropolitan growth statewide and a revival or intensification of growth in selected nonmetropolitan areas. In the last several years, metropolitan areas have become less attractive, both to their residents and to outsiders, whereas nonmetropolitan areas have become more so.[*] This new development, evident since 1970, is not unique to New York State or even to this nation.[**] It reflects a national trend that has brought population decline to many metropolitan areas. At least 44 of the 259 metropolitan areas in the nation have ceased growing; five of these SMSAs are in New York State (Fig. 2) and four of them are clearly declining.

One word of caution: The image of wholesale flight from the city is a little misleading when applied to SMSAs. Within these broad statistical aggregates, many communities continue to grow and some may even accelerate their growth. But what the general areawide pattern signals is a new and rising incidence of zero population growth or decline in metropolitan territory *outside* the central city: the longstanding trend of out-migration from central cities now applies also to the close-in suburbs.

THE ONSET OF METROPOLITAN-AREA DECLINE

How does a formerly growing metropolitan area suddenly commence declining? The Buffalo SMSA, where growth came to an abrupt halt after 1970, exemplifies the demographic forces at work. The Buffalo SMSA

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[*] Between two recent five-year periods (1965-70 and 1970-75), the percentage of population moving from nonmetropolitan areas declined from 3.1 to 2.6 and from the metropolitan sector rose from 2.9 to 3.5.

[**] Comparable developments have occurred in greater Stockholm, mettopolitan Copenhagen and Oslo, and other major European metropolitan centers. See Thomas Falk, *Urban Sweden* (Stockholm: Economics Research Institute, Stockholm School of Economics, 1976), p. 180 and footnote 1.

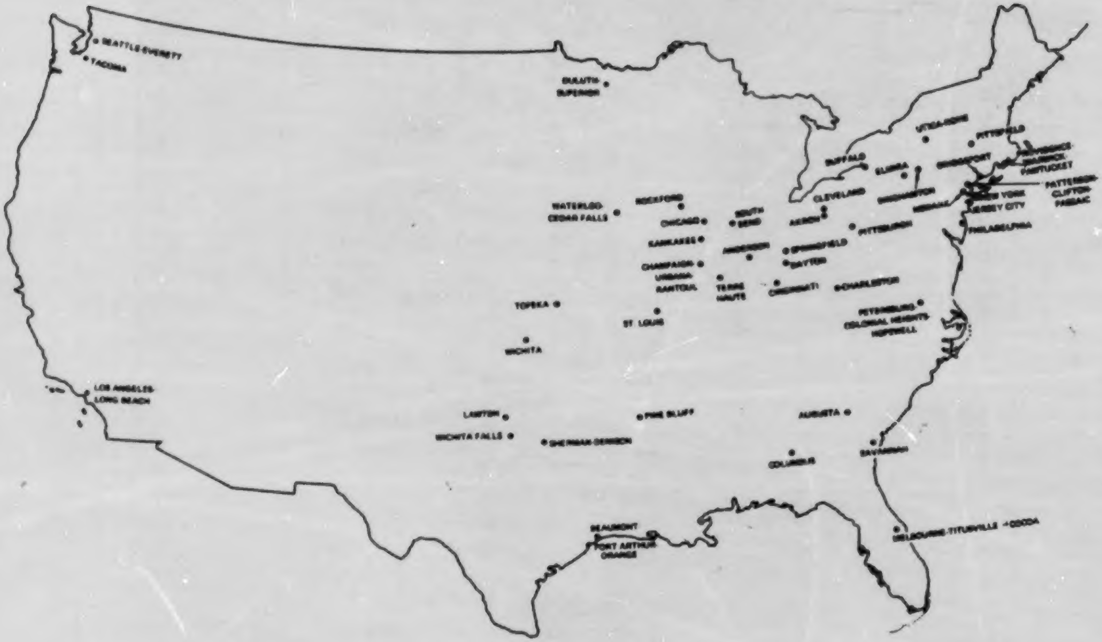
SEATTLE-EVERETT
TACOMA
DULUTH-SUPERIOR
WATERLOO-CEDAR FALLS
ROCKFORD
CHICAGO
SOUTH BEND
KANKAKEE
ANDERSON
CHAMPAIGN-URBANA-RANTOUL
TERRE HAUTE
TOPEKA
ST LOUIS
WICHITA
BUFFALO
CLEVELAND
AKRON
SPRINGFIELD
DAYTON
CINCINNATI
CHARLESTON
PITTSBURGH
ELMIRA
BINGHAMTON
UTICA-ROME
PITTSFIELD
BRIDGEPORT
PROVIDENCE-WARWICK-PAWTUCKET
PATTERSON-CLIFTON-PASSAIC
NEWARK
NEW YORK
JERSEY CITY
PHILADELPHIA
PETERSBURG-COLONIAL HEIGHTS-HOPEWELL
LOS ANGELES-LONG BEACH
LAWTON
WICHITA FALLS
SHERMAN-DENISON
PINE BLUFF
AUGUSTA
COLUMBUS
SAVANNAH
BEAUMONT-PORT ARTHUR-ORANGE
MELBOURNE-TITUSVILLE-COCOA

Fig. 2

Standard Metropolitan Statistical Areas
No Longer Growing Since 1970

had experienced a net outflow of 84,000 migrants (about 6 percent of its entire population) during the 1960s but its population increased by 42,000 anyway because the margin of births over deaths added 126,000. When birth rates dropped in the 1970s, natural increase (the excess of births over deaths) was no longer sufficient to offset metropolitan Buffalo's long-standing out-migration, and a previously unnoticed trend became apparent. Between 1970 and 1975, net out-migration removed 48,400 Buffalonians, but natural increase added only 26,500, leaving the Buffalo SMSA with a net loss of 21,900 residents.

Other metropolitan areas in New York that have been affected by the same combination of out-migration and a lower rate of natural increase include Rochester, Syracuse, Elmira, Utica-Rome, Binghamton, and New York. In all but the first two, population growth has halted since 1970.

EXTENSION OF GROWTH TO NONMETROPOLITAN AREAS

The counterpart of metropolitan decline has been a nationwide revival or intensification of growth in nonmetropolitan areas since 1970.* In New York State, where one person in nine resides in a nonmetropolitan area, the 1970-1975 pattern has reflected the broad contours of national trends, at least in the eastern half of the state:

- Despite the low birth rate, the state's nonmetropolitan population has been increasing 1.0 percent annually, compared with 0.9 percent annually during the 1960s.
- Nonmetropolitan areas have registered an annual 0.5 percent net in-migration compared with 0.1 percent annually during the 1960s.
- The type of nonmetropolitan counties that are growing at a fast rate through migration are those with intermediate or strong metropolitan commuting ties (i.e., at least 10 percent

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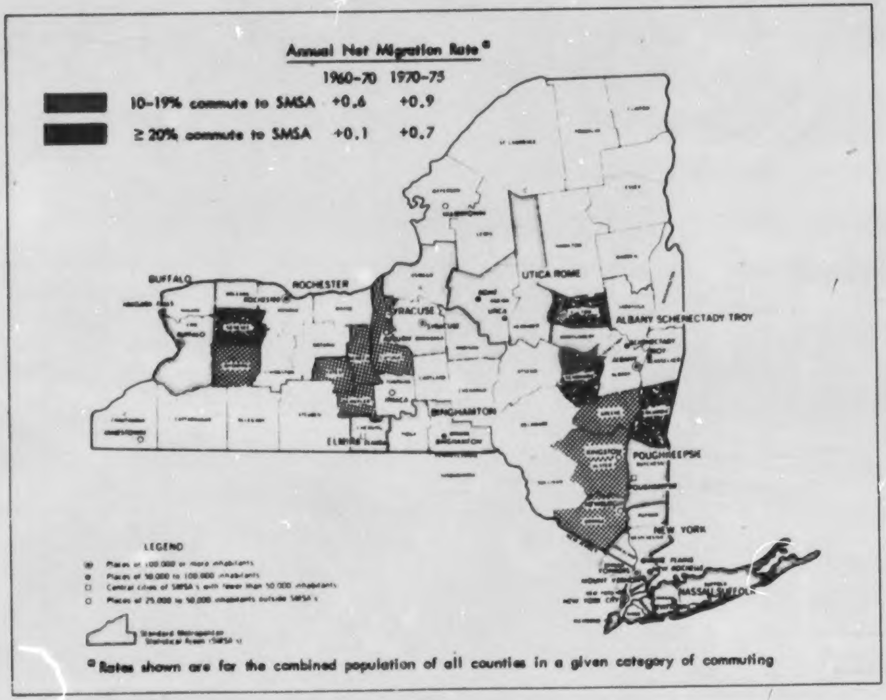
*See Calvin L. Beale, *The Revival of Population Growth in Nonmetropolitan America*, ERS-605, Economic Development Division, Economic Research Service, U.S. Department of Agriculture, June 1975; Peter A. Morrison, "Rural Renaissance in America? The Revival of Population Growth in Remote Areas," *Population Bulletin*, Vol. 31, No. 3 (Population Reference Bureau, Inc., Washington, D.C. 1976).

of their workers commute to jobs in a metropolitan area). Prime examples are Schoharie and Greene Counties, adjacent to metropolitan Albany, and Yates County, adjacent to metropolitan Rochester (western New York's only clear case of a fast-growing "commuter county"). Such counties exhibit the familiar process of "urban sprawl" sprawling further--SMSAs spilling over into their adjacent nonmetropolitan hinterland (Fig. 3).

o Exhibiting an impressive break with a past history of stable or declining population are those counties with weak commuting ties to an SMSA (especially those with less than 3 percent commuting). Essex and Franklin Counties are two clear illustrations of the unexpected "turnaround" that is taking place in many of the more remote nonmetropolitan areas of the country. Evidently these areas are both retaining a larger fraction of their native population and attracting increasing numbers of outsiders (Fig. 4).

New York's nonmetropolitan growth, then, is partly just the latest manifestation of urban sprawl, as counties adjacent to individual SMSAs fill up with people and fill out sections of the Northeastern Metropolitan Belt. But the fact that areas removed from metropolitan influence also are growing signals a new trend under way.

Recent studies that have inquired into nonmetropolitan growth and why it is occurring have shown several things. First, the trends toward early retirement, and toward larger retirement and death benefits for more people, have speeded up the increase in the number of retirees and lengthened the average interval during later life when a person is no longer tied to a specific place by a job. New sources of income such as the federal Supplemental Security Income program, as well as more generous pensions, have accelerated the flow of dollars into retirees' hands, expanding their role as consumers. Indeed, with their steady incomes assured regardless of location, retirees comprise a floating population of consumers whose presence in an increasingly service-oriented society creates jobs wherever they go. Since 1970, Columbia, Essex, Greene, Sullivan, and Yates counties have all felt this influence in varying degrees.


Annual Net Migration Rate[a]
1960-70 1970-75
10-19% commute to SMSA +0.6 +0.9
≥ 20% commute to SMSA +0.1 +0.7
BUFFALO
ROCHESTER
SYRACUSE
UTICA ROME
ALBANY SCHENECTADY TROY
BINGHAMTON
ELMIRA
ITHACA
POUGHKEEPSIE
NEW YORK
NEW YORK CITY
MOUNT VERNON
NASSAU SUFFOLK
LEGEND
Places of 100,000 or more inhabitants
Places of 50,000 to 100,000 inhabitants
Central cities of SMSA's with fewer than 50,000 inhabitants
Places of 25,000 to 50,000 inhabitants outside SMSA's
Standard Metropolitan Statistical Areas (SMSA's)

[a] Rates shown are for the combined population of all counties in a given category of commuting

Fig. 3—Nonmetropolitan counties with moderate to high commuting to jobs in metropolitan areas

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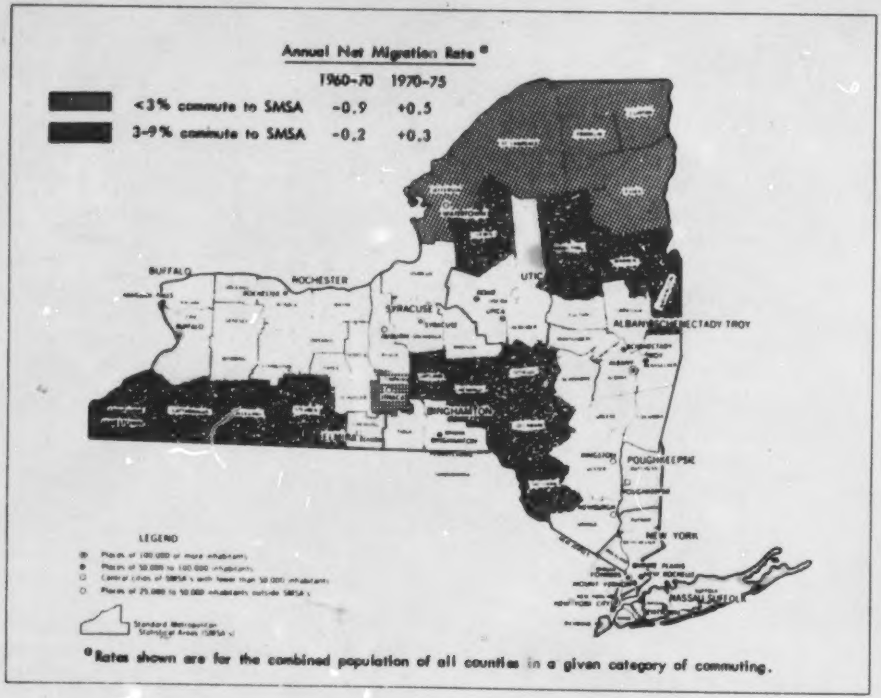
BUFFALO
ROCHESTER
SYRACUSE
UTICA
ALBANY-SCHENECTADY-TROY
BINGHAMTON
POUGHKEEPSIE
NEW YORK
NASSAU-SUFFOLK
LEGEND
Places of 100,000 or more inhabitants
Places of 50,000 to 100,000 inhabitants
Central cities of SMSA's with fewer than 50,000 inhabitants
Places of 25,000 to 50,000 inhabitants outside SMSA's
Standard Metropolitan Statistical Areas (SMSA's)

Annual Net Migration Rate[a]

		1960-70	1970-75
▨	<3% commute to SMSA	-0.9	+0.5
■	3-9% commute to SMSA	-0.2	+0.3

[a] Rates shown are for the combined population of all counties in a given category of commuting.

Fig. 4—Nonmetropolitan counties with minimal commuting to jobs in metropolitan areas

Just as retirees constitute an expanding and comparatively footloose subpopulation whose demands create jobs in nonmetropolitan areas, an increased orientation at all ages toward leisure activity has spawned another kind of rural "growth industry"--recreation. Much of this growth is concentrated in amenity-rich areas, especially mountains and shoreline, which often lie well outside the daily range of metropolitan commuting. The Adirondacks is an obvious example.

Together, these two sources of expanding employment--retirement and recreation--supplemented by the impetus of the state's higher education system, have increased the possibilities for moving to (or remaining in) certain nonmetropolitan areas. At a deeper level, however, the question remains of *why* Americans are acting on these possibilities. An important aspect of the explanation concerns people's preferences for nonmetropolitan living. Americans have long displayed inventiveness in trying to reconcile two conflicting desires: one for access to others and the other for separation from them. Examples abound in the American culture of the wish to love one's neighbor but keep him at arm's length, perhaps the most vivid being Americans' dogged preference for neorural or perhaps pseudorural residential settings. (This proclivity is evident in most Anglo-Saxon societies, but the American romance with the frontier may have reinforced it.)

To opinion surveyors, Americans state a strong desire to live in rural and small-town settings--but most of them admit, when questioned further, that they would like those settings to lie within thirty miles of a big city. The theme is an old one: Back in 1925, one housewife rejected suburbia as a bad compromise in favor of the "real" country. "By country," she wrote, "I do not mean a farm or many acres or huge castles built in imitation of English country houses." She meant instead, "a simple home built along a country road, near hills or water, from a quarter of a mile to two or three miles from the railway station, and within one and one-half hours' commuting distance from the city."*

Today, people continue to seek distance from crime, physical decay, poor schools, and objectionable neighbors, and access to a "view,"

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*Cited in Peter J. Schmitt, *Back to Nature: The Arcadian Myth in Urban America* (New York: Oxford University Press, 1969).

even if it means remoteness from urban excitement. Evidently, with television and long-distance commuting, the sense of isolation bred by geographical distance and small town mores has broken down, and these specifications can now be met in the heart of Yates and Schoharie Counties as well as in Suffolk or Rockland.

At the local level, a number of important issues turn on the implications of these trends. The oldest and largest central cities were already having trouble meeting their budgetary requirements before the slowdown in overall population growth occurred. Now the strictures of no-growth or decline have spread to many suburban communities, which face painful decisions on how to refit local expenditures to revenues that no longer grow. On the other hand, once sleepy villages are now being galvanized by spontaneous growth after decades of resignation to population stability and are hard-pressed to meet public needs.

There is a clear irony in the fact that this major shift in population distribution is spurring metropolitan interests to seek the benefits of population stability or decline--most obviously, stable budgets and the opportunity for effective planning--at the same time that it is threatening those benefits in nonmetropolitan areas. The evidence that there *are* benefits is already apparent in the widely publicized resistance on the part of many communities to accepting the costs that growth confers.

RACIAL CHANGE WITHIN METROPOLITAN AREAS

Where once the "inner" city provided the disadvantaged with opportunities for greater income, it is now largely the refuge of victims of income discrimination. A special case is that of blacks, who alone among all ethnic minorities have been unable to make the transition from urban inmigrant to suburbanite in any substantial numbers. Between 1900 and 1974, the percentage of the nation's blacks residing in metropolitan areas (according to the 1970 definition) rose from about 27 to 75. Within metropolitan areas, however, there has been no subsequent dispersion of blacks (Table 2). In 1900, 54.5 percent of the metropolitan black population resided in central cities; by 1974 77.5 percent did. The same is true for the Northeast and New

Table 2

DISTRIBUTION OF WHITE AND BLACK POPULATION
WITHIN SMSAs, 1900-1974

Year	Percentage of racial group by area of residence			
	Central City		Remainder of SMSA	
	White	Black[a]	White	Black[a]
	All U.S. SMSAs[b]			
1900	62.8	54.5	37.2	45.5
1950	56.6	77.2	43.4	22.8
1960	47.8	79.6	52.2	20.4
1974	38.1	77.5	61.9	22.5
	All SMSAs in Northeast			
1960	45.1	80.4	54.9	19.6
1970	39.4	81.6	60.6	18.4
1974	37.1	80.4	62.9	19.6
	All SMSAs in New York State			
1960	61.7	88.0	38.2	12.0
1970	54.0	88.1	46.0	11.9

SOURCES: Irene B. Taeuber, "The Changing Distribution of the Population in the United States in the Twentieth Century," in Commission on Population Growth and the American Future, *Population Distribution and Policy*, Sara Mills Mazie, editor, Vol. V of Commission Research Reports (Washington: Government Printing Office, 1972), Table 20; and U.S. Bureau of the Census, *Current Population Reports*, Series P-23, No. 55, "Social and Economic Characteristics of the Metropolitan and Nonmetropolitan Population: 1974 and 1970," U.S. Government Printing Office, Washington, D.C., 1975, Table 3.

NOTE: The populations of the central city or cities were taken as of the census dates. Since their areas are changing rather than constant, the changes in the populations in and outside central cities reflect expansion of cities' boundaries as well as the populations' natural increase and net migration.

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[a] For SMSAs in New York State, figures shown here are for nonwhites.

[b] Reference here is to the changing populations of the counties that were the SMSAs of 1960 at each census from 1900 to 1960. The SMSAs thus refer to constant areas. For 1974, reference is to the SMSAs as defined in 1970.

York State (for which data are shown only since 1960). This continued concentration of blacks in central cities contrasts sharply with the white population's dispersal from them.

Recent trends in population change, shown in Table 3, have tended to reinforce the pattern of diverging racial distribution in metropolitan areas. Between 1970 and 1974, the white population inside central cities in the Northeast declined 6.2 percent and the black increased 1.4 percent. The metropolitan population outside central cities ("the suburbs," roughly speaking) has increased 3.6 percent for whites and 9.9 percent for blacks. While the figure for blacks is impressive at first glance, it merely reflects the very small numbers of blacks now residing in the suburban ring (and in a limited set of suburban areas at that); it does not significantly offset the broader trend toward racial separation between central city and suburbs.

Compared with the white population, the black population is both younger and has a larger average family size. Demographically, this means that migration trends making for racial separation in one time period tend to perpetuate this separation in later times: the black population, by generating more births and fewer deaths relative to the white population, grows at a faster rate in places where it is now located. (Rising minority school enrollments through differential fertility are one manifestation of this tendency.) Thus, even if everyone suddenly stopped moving, the disproportion between black central cities and white suburbs would grow, thereby perpetuating existing patterns of racial separation between cities and suburbs.

Table 3

POPULATION CHANGE BETWEEN 1970 AND 1974, BY RACE AND AREA OF RESIDENCE

Area of Residence	Percentage Change in Population, 1970-1974				
	All Regions	Northeast	North Central	South	West
All Races					
United States	4.1	1.2	1.3	6.7	8.0
Metropolitan areas	3.6	0.2	1.0	7.6	7.1
Inside central cities	-1.9	-4.7	-5.5	-0.1	4.4
Outside central cities	8.4	4.0	6.4	15.7	9.0
Nonmetropolitan areas	5.0	5.1	1.8	5.4	11.6
White					
United States	3.5	0.9	0.8	6.3	6.8
Metropolitan areas	2.4	-0.3	0.1	6.8	4.0
Inside central cities	-5.1	-6.2	-8.0	-3.9	-1.0
Outside central cities	7.5	3.6	5.6	15.8	7.3
Nonmetropolitan areas	5.8	5.1	2.1	5.8	16.7
Black					
United States	6.7	2.4	6.3	6.3	22.3
Metropolitan areas	8.4	3.0	6.9	9.2	23.2
Inside central cities	6.3	1.4	2.3	8.7	24.3
Outside central cities	16.1	9.9	37.7	10.6	20.4
Nonmetropolitan areas	2.0	←-12.3	-3.4	2.7	7.2

SOURCE: U.S. Bureau of the Census, *Current Population Reports*, Series P-23, No. 55, "Social and Economic Characteristics of the Metropolitan and Nonmetropolitan Population: 1974 and 1970," U.S. Government Printing Office, Washington, D.C., 1975, Table 3.

V. STRUCTURAL MANIFESTATIONS: THE PRESSURES OF A CHANGING AGE PROFILE

Wide variations in the rate of population change for different age groups stand out as another major feature of New York's demographic outlook. A growing population is, of course, one major driving force behind expanding demands for public services and rising revenues to support those services. But many service demands grow in proportion to the population in specific age ranges--police and prisons had to expand in the 1960s to cope with the wave of young people passing through the ages of peak criminal activity; public health care facilities expand to accommodate the elderly and the poor and, of course, elementary school enrollments have begun to fall off as the population under 10 has shrunk. Similarly, revenues are partly a function of the proportion of persons in the working ages.

The rate at which a population is changing at any given time may vary widely from one age group to another. Between 1970 and 1975, the overall stability of New York State's population concealed considerable unevenness of change. For example:

- The under-10 population declined 13 percent.
- The population 20 to 34 increased 16 percent.
- The population 35 to 49 declined 8 percent.

These different rates of growth for different age groups reflect past fluctuations in fertility, the most notable of which have been the national decline in fertility that occurred during the economic depression of the 1930s, the baby boom following the Second World War, and the sudden drop in the fertility rate in the late 1960s. Each major rise and fall has left its indelible imprint on the population's age profile, whose unevenness is evident in Figure 5. New York State's age profile differs only slightly from this national pattern.*

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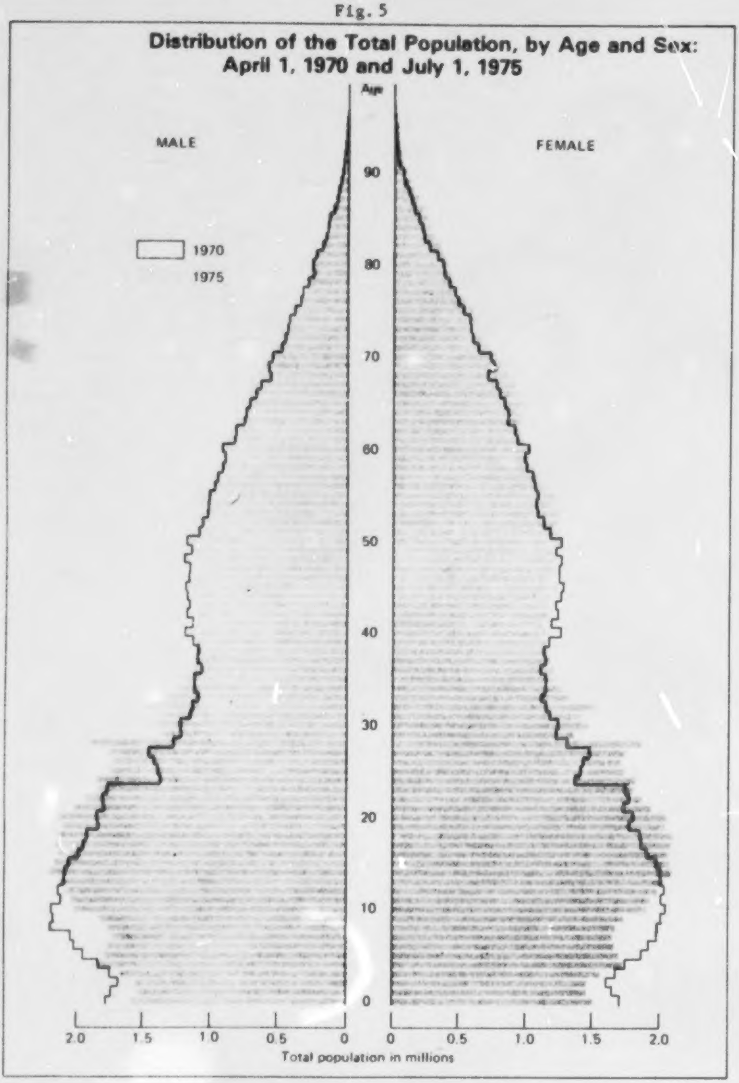
*Figure 5 is not shown separately for New York State, since 1975 data by single year of age were unavailable. The only noticeable differences are a somewhat smaller percentage of the population under 5 (6.7 for New York vs. 7.5 percent nationally), and a somewhat larger percentage over 45 (33.3 vs. 30.9 percent nationally).

Fig. 5



Distribution of the Total Population, by Age and Sex: April 1, 1970 and July 1, 1975

Peristalsis--the way a python swallows a pig--is an apt metaphor for how the United States has absorbed the impact of these swings in fertility. The many children born after World War II crowded the schools during the next decade and began forming their own households in the later 1960s. From birth to maturity they have overcrowded maternity wards, then schools, then juvenile justice institutions, and then the housing market.

This concentration of population in certain ages foreshadows certain inevitable changes which are likely to be felt in New York State and nationwide with about equal intensity. These changes will affect two distinct areas of policy concern: education and housing.

IMPACTS ON EDUCATION

In recent years, the baby boom children (persons now 11 to 29) have been passing through the colleges and universities and flooding the labor market. The bulk of the wave--the large cohorts born during the mid-1950s and early 1960s--is still in school, however. As the last of these people mature, school enrollments of persons 18 to 21 will drop (see Table 4). For those 22 to 34 years of age, often drawn back to higher education (especially to the community colleges), the outlook is different. A rapid expansion in their enrollments through the early 1980s is in prospect. Thereafter, growth will taper off, and their enrollments should decline before the end of that decade.

From a purely demographic perspective, then, existing pressure for contraction of the higher education system--except for community colleges--can only intensify. Community colleges are excepted because they occupy a distinctive position in catering to a considerably broader and generally older age range. Even so, they will need to plan carefully, directing their offerings toward those in the middle adult years as well as the traditional college ages.

The declining birth rate is imposing intense demographic pressures on elementary and secondary schools. The severity of this by now familiar problem is suggested in the following statistics for New York State. For every 100 children aged 5 to 14 in 1970, there were only 92 in 1975 and there will be only 79 by 1980. Between 1975 and 1985, the number of 15-to-19-year-olds will diminish by one-seventh.

Table 4

U.S. POPULATION AND PERCENT CHANGE IN SELECTED AGE GROUPS, 1960-1975, AND PROJECTIONS 1980-2000[a]

Year	No. of persons, by age (in thousands)			Percent Change Since Previous Year		
	18-21	22-34	35+	18-21	22-34	35+
1960	9,555	29,492	77,099	-	-	-
1965	12,204	30,554	81,814	28	4	6
1970	14,705	35,271	85,201	20	15	4
1975	16,479	42,024	88,673	12	19	4
1980	17,097	48,501	93,912	4	15	6
1985	15,431	52,249	101,834	-10	8	8
1990	14,519	51,705	111,170	-6	-1	9
1995	13,399	48,390	121,428	-8	-6	9
2000	16,002	44,819	130,594	19	-7	8

SOURCE: U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 519, April 1974, Table 1; Series P-25, No. 541, February 1975, Table 2.

[a] Census Series II projection, which assumes an ultimate completed cohort fertility rate of 2.1 births per average woman.

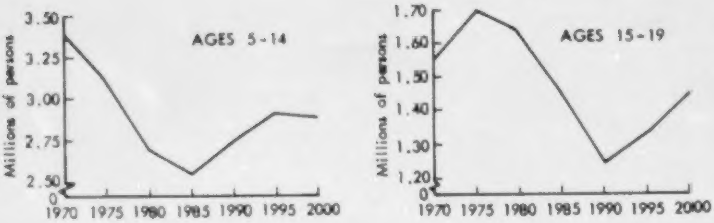


Fig. 6 - Projected changes in New York State's school-age population

Looking further into the future is fraught with increasing uncertainty, for we are referring to cohorts not yet born. (This is where the possibility of "rescheduled" childbearing, mentioned earlier, introduces some major unknowns.) Adopting the New York State Economic Development Board's assumptions* about future fertility and migration, however, one plausible future can be projected to suggest what lies ahead (see Figure 6). According to the Board's projections, the 5 to 14 age group will contract until the mid-1980s; thereafter, it will increase moderately. For 15-to-19-year-olds, the numerical shrinkage will continue through about 1990, followed by one last echo of the baby boom--a 16-percent increase between 1990 and 2000--to usher out the century.

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*These assumptions are: (1) "New York State's birth rate will increase somewhat during the remainder of the decade and approach the completed fertility rate of 1.90 by 1980. This assumes that the recent sharp decline in birth rates reflects, in part, a deferral of births and economic factors"; (2) "New York State's rate of net outmigration for the latter half of the decade will diminish somewhat from current levels." Source: New York State Economic Development Board, "Preliminary Revised Population Projections by Age and Sex for New York State Counties," with attachments, dated March 1, 1976.

As these figures suggest, demographic analysis gives timely notice of circumstances built into the population's structure for which ameliorative action is possible. But the process of contraction cannot be accomplished simply by reversing the process of expansion within an existing organizational setting.* Adaptation necessarily entails difficult choices of emphasis between often conflicting objectives. These choices distribute costs and benefits unevenly among groups of people and jurisdictions and are inherently political; but the mechanisms for making these choices may be unworkable. When enrollments decline, for example, education planners must decide whether to reduce teaching staff or decrease class sizes; whether to close some schools for economy or keep them open for convenience to the community; whether to submit to decline or seek new ways to use school facilities and faculties. Local school districts rarely have the degree of control over their organization that would allow such choices to be arrived at easily.

Nationally, educational planning tends to proceed in ignorance of what is already known about the consequences of population shifts. Symptomatic of this problem was the frenetic response in the education sector to the baby boom and recent bust. Throughout the late 1960s and early 1970s teachers and professors were trained in increasing numbers despite warnings as early as 1965 of an impending over-supply.** Today, there are scarcely enough people around to be educated for all those who are prepared to teach them. Others at this conference may wish to comment specifically on New York State's experience with education planning.

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*Paul Berman and Milbrey Wallin McLaughlin, "The Management of Decline: Problems, Opportunities, and Research Questions," The Rand Corporation, forthcoming.

**Allan M. Cartter, "The Supply and Demand of College Teachers," in *American Statistical Association Social Statistics Proceedings* (Washington: American Statistical Association, 1965) pp. 70-80; idem, "Scientific Manpower for 1970-1985," *Science*, Vol. 172, No. 3979 (April 1971), pp. 132-140.

IMPACTS ON HOUSING

The number of households in New York State increased at a 1.2 percent annual rate during the 1960s and, according to Census Bureau figures, has continued to increase at this same rate since 1970 despite the halt in New York's population growth. Part of the explanation for this continued growth is numerical: the population's changing age profile has made for expansion at the prime household-forming ages. There also have been behavioral changes: people are forming households differently now than in the past.

Regarding the first point, the number of households with heads under 35 has increased sharply since 1970 as the baby-boom cohorts have matured into adulthood (see Figure 7). According to the State Economic Development Board's projection, households in this age bracket will continue to expand at better than three percent annually through 1980.* This age concentration has created an especially heavy demand for the particular kinds of dwelling units suited to this age group--low-to-moderate priced apartments in densely settled areas and the like--and this pressure on demand will continue for another five years or so. By about 1980, however, the age concentration will be on the 35-to-44 group--by then, the matured first cohorts born after World War II. During the 1980s the number of households headed by someone between 35 and 44 will increase at better than 3 percent annually.

In addition to these considerable pressures associated with a changing age distribution, other demographic influences are affecting housing requirements. As everyone is aware, household composition and family structure have undergone fundamental change and are currently in a state of considerable flux, both sociological and demographic.** One influence is a decided increase in the proportion of young men and women who refrain from marrying. Nationally, the increase is especially apparent among persons 20 to 24 years old (an age at which most men

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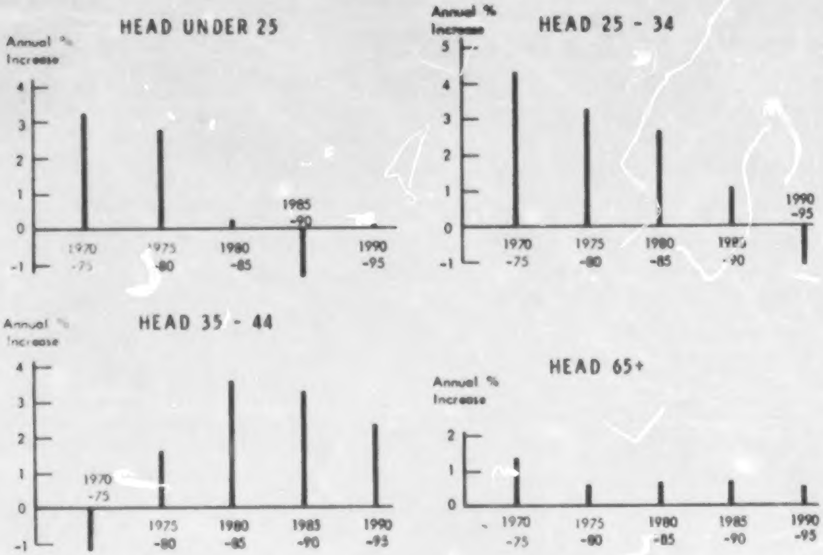
*New York State Economic Development Board, "Preliminary Revised Household Projections for New York State Counties," with attachment, dated March 30, 1976.

**See Paul C. Glick, "Some Recent Changes in American Families," *Current Population Reports*, Special Studies, Series P-23, No. 52, n.d.



HEAD UNDER 25

HEAD 25 - 34

HEAD 35 - 44

HEAD 65+

Fig. 7 - Projected annual increase in New York State households, 1970-1995, by age of head (selected age groups)

SOURCE: New York State Economic Development Board, "Preliminary Revised Household Projections for New York State Counties," with attachment, dated March 30, 1976.

and women have traditionally married). At this age, 60 percent of men and 40 percent of women were as yet unmarried in 1975, compared with 53 percent and 28 percent in 1960. It is an open question whether this tendency to remain single represents merely a postponement of first marriage or a developing trend toward lifelong singleness.

Another influence is the trend toward establishing households in "nonfamily" living situations as primary individuals. ("Primary individuals," in the Census Bureau's terminology, are household heads who live in their own homes entirely alone or with persons not related to them.) Between 1970 and 1976, the number of households nationally that were headed by primary individuals of all ages increased from 11.95 to 16.81 million, or about 41 percent. (This compares with a 9-percent increase for all other types of households--husband-wife, other male-headed, or female-headed families.) For reasons I cannot explain, this national trend is less evident here in New York State and is not projected to continue in the future, at least according to the Economic Development Board's figures. Those figures do show a somewhat more rapid increase among primary individuals between 1970 and 1975, but they project a *slower* increase (relative to families) in the future.

The nationally rising incidence of single-parent families, two or more unrelated people living together, and people of all ages living alone suggests the extent to which life-style options have been widened by affluence and the relaxation of social norms. Changes in taste and preference have made many people ready to live apart from the basic family unit: grown children are readier to move out of their parents' home, and a widowed parent more reluctant to move in with an adult son or daughter. At the same time, higher real income enables more people to afford separate living space. Overall, there is likely to be a continuing interplay between the demographic and economic circumstances that shape the typical cluster of persons who live together as a household and the social and cultural changes that have broadened the types of living arrangements and companionship that society condones.

A third change stems from the widening of the differential mortality of women and men. There is now a considerable gap, wider than in previous decades, between female and male life expectancy.* One consequence of this gap has been a steady rise in the percentage of females among older persons. (In 1960, women made up 55.7 percent of the population 65 and over in New York State; by 1985, they are projected to comprise 61.2 percent.) As wives increasingly outlive their husbands, the incidence and duration of widowhood will inexorably rise. (Nationally, in 1975, 53 percent of women 65 and over were widows.)

The prospect of more widows, each facing a longer expected interval without a mate, foreshadows probable changes in living arrangements at these ages. And because increasing numbers of the elderly will be covered by retirement and pension plans, such changes will be economically feasible for larger numbers. At a national level, this combination of economic and demographic factors has already brought substantial changes in the living arrangements of surviving family members at later ages. In 1975, 62 percent of widows 65 and over lived alone, compared with 48 percent in 1968. New York City, as well, manifests these changes: according to the City's Department for the Aging, the number of elderly live-alones rose 26 percent between 1970 and 1973.**

These structural changes among elderly households raise a broader question of *where* the elderly are likely to be. One such concentration of elderly persons is in central cities; another is in older suburbs, where they settled as newlyweds in, say, the 1930s. More recently, there has been a developing trend among retirees to settle in areas away from metropolitan centers. Figures 8 and 9, showing the changing distribution of social security beneficiaries 65 and older between 1969 and 1975, furnish indicators of where New York State's elderly population is now disproportionately concentrated or becoming so concentrated. (These figures are based on the concentration index data shown in the Appendix Table.)

Figure 8 shows counties with disproportionate concentrations of elderly beneficiaries in 1975. In some counties (e.g., Essex and

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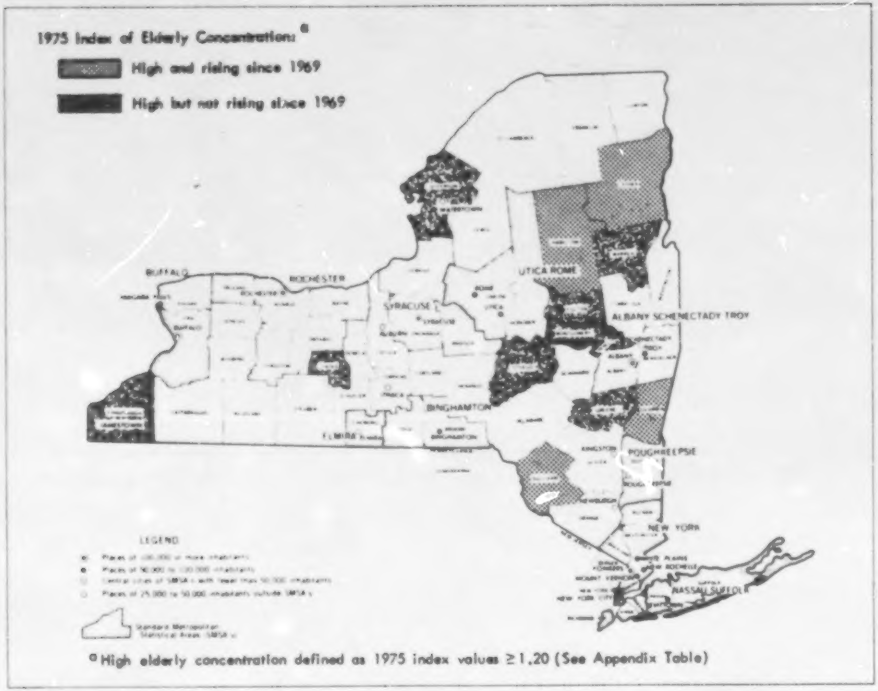
*In 1974, a 65-year-old white female could expect to outlive her male counterpart by 4.2 years; in 1960, the expected difference was only 2.9 years.

**As reported in *The New York Times*, September 29, 1975.


1975 Index of Elderly Concentration:ª
▨ High and rising since 1969
■ High but not rising since 1969
BUFFALO
ROCHESTER
SYRACUSE
UTICA ROME
ALBANY SCHENECTADY TROY
BINGHAMTON
ELMIRA
JAMESTOWN
KINGSTON
POUGHKEEPSIE
NEW YORK
NASSAU SUFFOLK
LEGEND
Places of 100,000 or more inhabitants
Places of 50,000 to 100,000 inhabitants
Central cities of SMSA's with fewer than 50,000 inhabitants
Places of 25,000 to 50,000 inhabitants outside SMSA's
Standard Metropolitan Statistical Areas (SMSA's)

ª High elderly concentration defined as 1975 index values ≥ 1.20 (See Appendix Table)

Fig. 8—Counties with disproportionate concentrations of Social Security beneficiaries 65+ in 1975

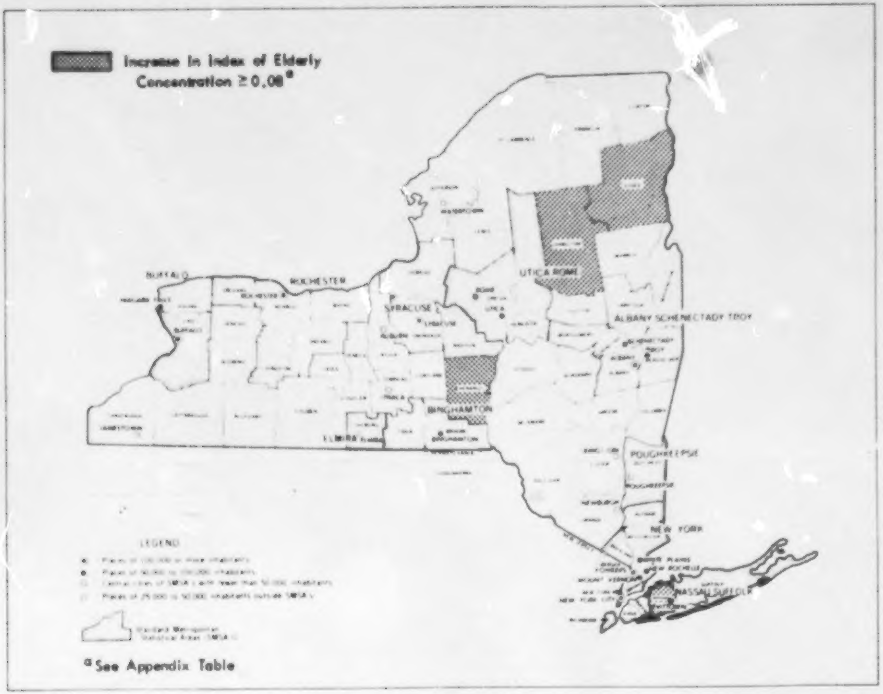

▨ Increase in Index of Elderly Concentration ≥ 0.08[a]
BUFFALO
ROCHESTER
SYRACUSE
UTICA-ROME
ALBANY SCHENECTADY TROY
BINGHAMTON
ELMIRA
POUGHKEEPSIE
NEW YORK
NASSAU-SUFFOLK
LEGEND
Places of 100,000 or more inhabitants
Places of 50,000 to 100,000 inhabitants
Central cities of SMSA's with fewer than 50,000 inhabitants
Places of 25,000 to 50,000 inhabitants outside SMSA's
Standard Metropolitan Statistical Areas (SMSA's)
[a] See Appendix Table

Fig. 9—Counties with sharply rising concentrations of Social Security beneficiaries 65+ between 1969 and 1975

Hamilton) the concentration has been increasing since 1969; in others (e.g., Greene and Jefferson) it has not. The population of Greene County, for example, contains better than 50 percent more beneficiaries per capita than the state as a whole, but that percentage has been declining.

Figure 9 furnishes a somewhat different perspective: it displays counties with a sharply rising concentration of beneficiaries. Nassau, Chenango, Essex, and Hamilton Counties (the latter two already containing disproportionate numbers of beneficiaries in 1969) registered sharp relative increases since 1969 (concentration index change $\geq$ 8).[*]

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[*] The criterion for "sharply increasing" is that the 1969-1975 change in the index of elderly concentration, ΔCI, is $\geq$ 8:

$$\Delta CI = \left[\frac{\text{county's share of NYS beneficiaries, 1975}}{\text{county's share of NYS population, 1975}}\right] - \left[\frac{\text{county's share of NYS beneficiaries, 1969}}{\text{county's share of NYS population, 1970}}\right] \times 100.$$

VI. EASING THE TRANSITION TO STABILITY

Demographic analysis has numerous specific applications at the state level. Forecasts, especially, figure in planning decisions about electric power generating facilities, transportation and land use, and economic development. More generally, demographic analysis reveals transformations in the population's age structure and its distribution among particular metropolitan and nonmetropolitan areas, and demographic forecasts then attempt to anticipate the pattern of things to come. In both cases they draw attention to emerging and approaching issues associated with population change and set the stage for public debate on timely actions for dealing with those issues. This paper, it is hoped, has accomplished that purpose.

Forecasters are pleased when their predictions eventually prove to be accurate, but close accuracy is less important than the organizational response a forecast sets in motion. By way of structuring the ensuing discussion on this point, let me suggest at least three approaches that state policies formulated to ease the transition to stability might take:

(1) *Crisis management*, i.e., deal with problems as they come up, without benefit of a longer-term strategy. This approach derives from the resigned conviction that no single state's policy can have much effect on massive and autonomous migratory shifts in a nation where people are free to move about as they please.

(2) *Active trend modification*, i.e., project trends into the future in an effort to foresee problems and needs and devise social mechanisms to guide these trends in ways that advance broad purposes. An example would be the attempt by some states to preserve open space through new land-use regulations. This approach recognizes that processes of social change often carry with them considerable momentum; rather than put up futile resistance, realistic policies will accept and attempt to exploit the processes to advance general purposes that are agreed upon.

(3) *Goal orientation*, i.e., designate explicit future goals and devise plans to achieve them. New York State's "new cities" program is an example. Goal orientation is premised on an ability to achieve closure of means and ends (e.g., through a mechanism such as the State Urban Development Corporation) in order to create a desired future.

Each of these approaches does not so much define policy as express a way of viewing change and an organizational response to the problems engendered by it. State policy could be limited to reacting; or it could strive to advance broad purposes; or set its sights on the specific goals of some "master plan." Which policy stance should be chosen depends on one's philosophy as to the proper role of the public sector; on what one thinks state policy has in its power to do; on the extent to which processes of change under way can be exploited toward deliberate ends, rather than ignored or thwarted; and on the clarity with which underlying purposes themselves are perceived.

Population stasis and economic stagnation are not synonymous and, in an era of slow population growth, need not be correlated. Pittsburgh, Los Angeles, Savannah, and Binghamton demonstrate that a comfortable equilibrium is attainable. What has been disturbing about stasis is that policies evolved during earlier periods of growth prove awkward or unworkable when growth is gone, and the purposes motivating them are outmoded or simply unclear.

Appendix Table

Concentration of New York State's Social Security Beneficiaries 65 and Older, by County: 1969 and 1975

County	Concentration Index[a] 1969	Concentration Index[a] 1975	County	Concentration Index[a] 1969	Concentration Index[a] 1975
Albany	1.029	1.067	Niagara	0.920	0.972
Allegany	1.056	1.033	Oneida	1.048	1.068
Bronx	1.054	0.993	Onondaga	0.882	0.915
Broome	1.079	1.124	Ontario	1.069	1.000
Cattaraugus	1.170	1.132	Orange	1.016	0.973
Cayuga	1.098	1.104	Orleans	1.032	1.004
Chautauqua	1.269	1.273	Oswego	0.953	0.886
Chemung	1.103	1.115	Otsego	1.266	1.267
Chenango	1.019	1.111	Putnam	0.791	0.742
Clinton	0.778	0.697	Queens	1.049	1.072
Columbia	1.328	1.355	Rensselaer	1.076	1.064
Cortland	0.938	0.933	Richmond	0.827	0.818
Delaware	1.159	1.162	Rockland	0.597	0.665
Dutchess	0.904	0.912	St. Lawrence	0.934	0.917
Erie	0.933	0.970	Saratoga	0.745	0.744
Essex	1.138	1.249	Schenectady	1.256	1.254
Franklin	1.150	1.131	Schoharie	1.253	1.141
Fulton	1.317	1.260	Schuyler	0.959	0.927
Genesee	1.028	0.990	Seneca	0.978	0.943
Greene	1.574	1.528	Steuben	1.035	1.019
Hamilton	1.432	1.516	Suffolk	0.683	0.718
Herkimer	1.189	1.132	Sullivan	1.308	1.337
Jefferson	1.268	1.222	Tioga	0.777	0.795
Kings	1.084	1.052	Tompkins	0.722	0.727
Lewis	1.003	0.931	Ulster	1.156	1.107
Livingston	0.847	0.832	Warren	1.300	1.262
Madison	0.879	0.855	Washington	0.976	1.020
Monroe	0.940	0.951	Wayne	0.963	0.916
Montgomery	1.482	1.460	Westchester	0.994	1.035
Nassau	0.749	0.834	Wyoming	1.021	1.015
New York	1.292	1.230	Yates	1.371	1.344

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[a] Index of elderly concentration defined as:

$$CI = \left[\frac{\text{county's share of all NYS beneficiaries 65+ in 1969 [or 1975]}}{\text{county's share of NYS population in 1970 [or 1975]}}\right]$$

EFFECTS OF POPULATION CHANGE ON VOTING REHAVIOR AND OTHER ASPECTS OF LIFESTYLE

Testimony

Submitted to:

Select Committee on Population

U.S. House of Representatives

by

Vincent P. Barabba
Xerox Corporation

Some very surprising changes have been taking place in regard to the population of this country in the last few years. I'd like to discuss these changes and also take a look at the future where appropriate.

As as a preface, let me point out that over the past 25 years or so the emphasis in the various reports and analyses in the demographic area has been on the birth rate and the future size of our total population. But in the next quarter century, decisionmakers in the private and public sectors, as well as the demographers, probably will be more concerned about the composition of the population and its distribution.

Let's discuss voting behavior first.

Since politics in America is shaped by the people, or at least that is the tradition, the composition of America's people in the years just ahead will certainly have a bearing on the political climate.

Though it's highly speculative to attempt to predict how people will vote we can analyze population change to get at least an indication of some of the things that will happen in the first years of our Nation's Third Century. In essence, we can look five or ten years ahead and use relatively straight-line projections with reasonable accuracy to get a picture of various demographic and social conditions.

I use the word "projections" rather than the word "forecasts" because there is an important difference. Projections are the figures obtained by assuming that current trends will continue into the future, without speculating on changes in the underlying relationships. On the other hand, a forecast includes an attempt to predict new circumstances or new relationships, as well as the application of past relationships to past trends. I assume that before the hearings of the panel are over, someone will venture into the land of forecasting, but for me, I'll take the "safer trip" through the land of projections.

At any rate, even with projections, it gets more difficult when we try to look ahead, say, 25 years to the turn of the century. Because that kind of a time frame allows many of the current social trends to run their course and possibly reverse themselves, or to form new patterns. But I'll do the best I can for today's purposes, since we need an extended time framework to consider the socioeconomic and political consequences of the current demographic patterns which are currently unfolding.

The concerns of those of us interested in understanding our population have been undergoing a change. Over the past 25 years or so, the emphasis in analyses and reports has been more on the birth rate and the future size of the total population. But in the next quarter century we probably are going to be more concerned about the composition of the population, and its distribution.

There are a number of surprising changes which have stimulated this about-face, and one of the most important is that the population has grown far less rapidly than most people imagined just 10 years ago. In 1976, for example, the number of births per 1,000 population was 14.7, which represents the lowest rate ever recorded in the Nation's history. And our surveys of birth expectations indicate that birth rates will continue to remain low. Although in mid-1977 the birth rate rose slightly, the rate returned to the lower 1976 level by the end of the year.

The reasons are several, and all of them can have strong political repercussions if they continue. We can cite more widespread use of contraceptive devices and abortions, squeezes on the pocketbook through recession and inflation, the growing desire of women to have careers and their higher degree of education, concern over pollution, delays in marriage, more divorces, and other factors as well.

If these lower birth rates continue as expected we are headed toward zero population growth within a generation or so after the turn of the century. It will take that long simply because of the large proportion of the population that is now in and will be entering the reproductive years.

But zero population growth may possibly be preceded by another phenomenon which is already becoming evident, and that is what we might call zero growth of husband and wife families. This is a phenomenon that we have not paid much attention to but which could become a reality if present trends continue. There are a number of possible combinations of social and institutional forces that could produce a halt in the incremental growth of husband/wife families relative to other social unit categories - some of which I mentioned a moment ago relative to the lower birth rates that we have been experiencing.

The developments affecting the size and number of families recent years are truly startling. From 1970-1977, the number of marriages has increased by less than 1 percent -- just over 2 million marriages a year -- even though a large number of our population has been moving onto the young adult ages. There were more than a million divorces in 1977, up 55 percent over 1970. In 1960, only one-third of the young women 21 years old had never married. Now over half of the young women 21 years old are still single.

These trends have contributed to a corresponding phenomenon, and that is a decline, in fact a dramatic decline, in the size of households and at the same time an increase in the number of households. And there are great political implications in these changes.

Between 1970 and 1977, the number of households in the United States increased from 63 to 74 million, and half of this increase was created by persons living alone, or with non-relatives. At the same time, the average size of households declined to fewer than three persons for the first time in our history. We can attribute this to both the lower fertility rate and the higher proportions of persons living alone.

What will happen to our households in the years ahead is going to be very important. The Census Bureau has projected households to increase to more than 90 million in the next 10 years -- a gain of 22 percent. Compare this with a projected increase in the total population of only 9 percent.

The size of household, on the other hand, is expected to continue to decrease. Back in 1940, the average number of persons per household was 3.67. Then in 1974, for the first time in our history, we dipped below the three-per-household mark-down to 2.97. By 1983 we expect the figure to be 2.68 per household in the middle-range estimate and in 1990, the projection is for just 2.5 persons per household. These projections, of course, reflect lower birth expectations as well as the current lower birth rate.

Just a few years ago, more than half of the young wives in the key ages of 22 to 24 said they expected to have 3 or more children. More recently, only one-fourth of them wanted 3 children. Yet fewer than half of them said few years ago that they wanted 2 children, and more recently, this has risen to three-fourths of them.

A recent Manpower Report of the President calls the transition from the three-child family to the two-child family "by far the most important demographic development of the decade".

There is one other interesting area concerning the population per se, and that is its age makeup. With fewer children, our population will get older. Depending largely on the birth rate, our median age by the year 2000 should be anywhere from 32.5 to 37.3, and the latter figure looks valid at current fertility levels. Last year it was 29.4. But even more significant from the political standpoint is the median age of those who will be of voting age. By the year 2000, their median age would be somewhere between 42 and 43.

Relatively speaking, the proportion of persons 65 and over should increase only slightly -- from about 10.8 percent in 1977 to between 11.3 and 12.9 percent in the year 2000. But this group will grow rapidly after the year 2010 when the baby boom children of the 1940's hit that age group.

An older population is, of course, likely to affect the political climate. And in addition to the influence of the population over 65, there will be the vast population of those between 50 and 65 who will be thinking about what their concerns will be when they reach 65. We project them to number slightly over 40 million and to make up between 15 and 16 percent of the total population by the year 2000.

All this should have a deep impact on representation in Congress, especially as retirees concentrate in new areas. Abetting the greater freedom of retirees will be higher retirement incomes, the availability and cost-saving of Medicare, and the trend of older persons ceasing to live with their children.

The impact of an older population on politics may well be stimulated even more in these communities, since retirees may find politics a major form of activity. Additionally, they may well call for programs having quick payoffs since their long-range perspective is necessarily limited.

The greatest increase in the next 22 years should come in the groups in the middle working years -- from 35 to 44. We should see an increase of about 18 million during this time in that age group, which will be a major increase of 76 percent. Compare this with a projected growth for the entire population of 13 to 30 percent, depending on the birth rate and some other factors.

Yet another demographic factor that we should watch is immigration. In the next 10 years, the impact of immigration will be more pronounced, if the lower birth rate continues. In fact, we expect immigrants to account for 20 to 30 percent of all the growth in the population between now and 1988, under the current ceil-ing of 400,000 legal immigrations a year. In whole numbers, we should see about 4 million immigrants in the 10-year period from 1975 to 1985. This would be the equivalent of 7 Congres-sional Districts, without even counting the children that the immigrants will have once they come to the United States. The 4 million also would be greater than the current population of more than half of our States.

We also should remember that these immigrants will have a high concentration of persons who are of voting age.

Let's turn for a moment to the black population, which is expected to grow only modestly between now and the year 2000. The Census Bureau projects an increase from about 25 million in 1977 to between 31 and 36 million, depending on future fertility rates. This would be an increase from 11.6 percent of the total population in 1974 to between 12 and 13 percent by the turn of the century. Incidentally, more blacks are moving to the South these days, and fewer are leaving.

Another major influence on the political tenor and structure in the Third Century will certainly be where the people are going to be living, and this will involve both the regional distribution and patterns within and outside the metropolitan centers.

These patterns have been changing, especially in the past few years. Many of us considered that the day would come when migration would reduce the rural population to such a low level that the volume and rate of movement to metropolitan centers would decline. But no one predicted that this would happen as soon as it has. Today, more people are moving away from our large metropolitan areas than are moving to them. The figures tell us that in the last seven years (1970-1977), the population living in the metropolitan areas increased by 4.5 percent, while the population in the non-metropolitan areas increased by 9.3 percent. This is a complete reversal of past history of the United States.

These changes in migration between metropolitan and non-metropolitan areas are both the cause and the effect of regional population shifts. Since 1970, the rate of migration to the West has declined considerably, but on the other hand, the rate of migration to the South has risen. For the next 15 years, we can expect an in-creasing rate of movement to the so-called "sunbelt" which extends roughly from Virginia through Texas and on to southern California.

What will happen after 1990 is more of a matter of speculation. But by that time, we are likely to have seen fundamental changes in the national economic and political power patterns of the Nation, primarily at the expense of the Northeastern region.

Meanwhile, the Southeast alone has had a net gain from migration between 1970 to 1975 that is almost triple the gain recorded during the previous five years. And this has included many professionals, educators, managers and executives who have accompanied the move of larger national concerns, plus greater numbers of retired people. Again in whole numbers, the southeast has gained 8 million people in just the last 10 years. Contrast this with the State of New York, which has actually lost population since 1970, according to Census Bureau estimates.

All-in-all, circumstances have changed so that more people can choose where they live on the basis of different considerations than in the past. These include rising income levels and decreasing family size, which permit greater emphasis on climate, recreation, compatible neighbors, political styles of elected officials and other considerations.

As an example, we now have in our country an estimated 3 million second homes. This creates a new set of problems for these people, and they may be making their voices heard in two communities instead of just one. They are paying taxes in two communities, probably at different rates. And they may represent an entirely different set of values in their second home communities than do the year-round residents. This is just one development that could alter the political climate.

Taking in the entire migratory picture, even though people may tend to bring their political allegianc[e]s with them, we can't discount the impacts of a new environment and ensuing changes in social and economic identification.

Migration, of course, is affecting our cities, along with a number of other factors. So let's take a look at the cities. A notable trend since 1970 is that the larger metropolitan areas have shown the least growth. In fact, 7 of the 8 metropolitan areas with more than 3 million people have shown little or no growth, the only exception being here in the Washington area. The metropolitan areas of the Northeast and North Central regions, taken together, have barely gained at all in the 1970's -- less than half a percent. Not surprising, however, metropolitan areas in the West and the South have grown by about 10 percent.

Within the cities, the central cities have lost population since 1970 through declines in the white population, which more than offset gains by the black population. The whole numbers show 4 million fewer whites in the central cities since 1970 and an increase of about 1.5 million by blacks and other races. But we also should note that the black population living in the suburbs has grown by 4 percent each year in the 1970's, and this is considerably greater than in the 1960's.

Finally, I'd like to talk briefly about the shape of political coalitions which might develop in the years to come. One coalition might be on the basis of age. I mentioned earlier that there is a possibility of increased activity on the part of retired persons who concentrate in particular locations. But the children of the baby boom will face changes in circumstances that could also lead to political action on their part.

These young people who were born in the late 1940's and the 1950's are larger in numbers than the age groups born in the decades immediately before and after them. Because of their greater numbers, the baby boom children will face increased competition for jobs and thus many will fail to achieve the same relative degree of prosperity that characterized their parents at the same life cycle stage.

And they will be better educated. Even today, 24 percent of those who are between 25 and 29 have graduated from college, and the percent has consistently risen. Of their parent's age groups only 14 percent who are now from 45 to 54 are college graduates, and only 10 percent of those from 45 tc 55 years old. So the result may be increasing dissatisfaction with employment, especially among the white collar workers. Many will have this in common.

But forming a political coalition out of this baby boom group may turn out to be difficult, because there is a paradox. They may have employment problems in common, but they also will have a greater variety of social ingredients, such as family types, life styles and living arrangements.

Throughout the 1950's and 1960's, the problems of one family - - which more often than not consisted of husband, wife, and at least two children - - could typically be translated into the problems of all families. But in the years to come, there will be fewer families characterized by this type. There will be a greater proportion of childless couples, and more couples with only one child. There also will be more persons living alone at any given time, as young people delay marriage or are divorced.

Perhaps most important of all, more of our families will consist of only one parent, and here are the facts. Back in 1955 about 10 percent of families were headed by women. Last year, 14 percent of all families had a female head, and the percent is likely to rise in the future. The rise in these families has been especially great among blacks, a proportion which grew from 21 percent in 1955 to 37 percent last year. And it is even greater in the central cities of the metropolitan areas.

This increasing variety of family types may make agreement on political action more difficult, since they cut across all other groups - - ethnic, racial, economic and social class. For example, a retired black couple living alone in the inner city may have more in common - - politically - - with a similar white couple also living in the inner city, than they would with a young black family with three children living in the suburbs.

So these are some of the ingredients that will be shaping the political climate in the third century. Now I'd like to briefly discuss change in lifestyle.

In recent years, some people have been describing - - in studies, articles, and speeches - - the disadvantages accruing from an indefinite expansion in the U. S. population. They have predicted dire consequences if population growth were not arrested. These people would proclaim zero population growth to be the coin of the demographic realm, and they would institute policies to bring about its implementation. But generally, people on all sides of this complex issue have been aware that the implications are considerable for a U. S. population experiencing ZPG for an extended period of time.

However, advocates of ZPG consider these implications to be less serious and costly than disastrous problems associated with overpopulation. Nevertheless, ZPG has implications for the level of population and its age distribution, with likely complex problem-generating spillovers into the social, economic, and Government spheres. I will mention later some of the demographically influenced factors associated with ZPG that would affect some industries and occupations, as well as Government.

There are some factors associated with the annual volume of births that can exert a differential influence on both economic and social developments. One is the annual distribution of births by birth order as it relates to the mother. Another is the composition of annual births according to the marital status of the parents.

Whereas the costs of public education for a student are independent of the rank ordering of a child, parental costs associated with having a first child are generally higher than for later ones. A completed fertility rate of 2.1 children per woman used in the Census Bureau Series II projections for the year 1985 implies a higher proportion of first order births to all births than occurred in the baby boom years of 1955 and 1960. It would, however, be about the same proportion we experienced in 1973.

In 1985, perhaps 40 percent of all births could be first order ones compared with 28 percent in 1955, and 26 percent in 1960. This implies the births in 1985 which are projected at about the level as in 1955 - - which amounts to 4.1 million - - should generate more economic demand than did the 1955 birth volume, all other things being equal. Similarly, if we have the projected stability in the proportion of first order births in 1985, compared with the early seventies, the 1 million or so increase in the volume of births projected between 1974 and 1985 should generate about 400,000 more first order births in 1985 than in 1974.

Probably somewhere in the neighborhood of an additional $700 are expended in "tooling" up for the initial child than for subsequent children. In an economy the size of ours, a potential $250 million stimulus is of a magnitude that one usually rounds off in preparing projections. But still, it is undoubtedly of interest to manufacturers and distributors who cater to the baby market.

The demise of he baby boom has been limited entirely to marital births, reflecting a decline in marital fertility and the percent of women married in the childbearing ages. Among women 20 to 24 years of age, the percent married slipped from 69 to 54 percent between 1961 and 1976.

Concurrently, children born to this married group declined from 349 per 1,000 in 1961 to 182 per 1,000 in 1976.

> From 1961 to 1976, total marital births plummeted from 4,028,000 to 2,700,000, whereas non-marital births increased from 240,000 to an estimated 468,000. Non-marital births, which in 1961 made up less than 6 percent of all births, climbed to 13 percent in 1973.

For female heads of families between the ages of 25 and 44, the projections indicate a hefty percentage increase of 35 percent, based on 3.4 million persons in 1977 and 4.6 million in 1985.

From the standpoint of income, the most productive years for families, especially husband-wife families, are between ages 25 to 54. But expenditure patterns tend to differ. In the earlier years of the family, proportionately more of the family income is earmarked for establishing the family and nurturing its growth. In later years, savings and investments assume a somewhat larger role as income grows, assets accumulate, and children have been educated and have left the nest.

Husband-wife families with heads between 25 and 34 years of age are of particular importance because of their ability at this comparatively early stage of marriage to implement attitudes about the style of life they will lead. This is not unrelated, of course, to the number of children they will have. Between 1977 and 1985, husband-wife households in this age group are projected to increase from 11.2 to 14.3 million. This is a 28 percent increase which outpaces the total household projection increase of [illegible] percent. A projected increase (35 percent) also applies to the 35 to 44 year old husband-wife families. But the 45 to 54 year old group, which was born during the low birth rate decade of the thirities, will decline by 200,000 families, or 2 percent.

In 1985, about 75 percent of the projected 233 million people living in the United States - - under Series II projections - will be 50 years or younger. Thus they will have experienced their formative years in the post-World War II era, that is, since they were 10 years or younger in in 1945. Whether we are of pre-war or postwar vintage, as a people we have continued to produce and consume an ever-increasing per capita amount of goods and services - - ranging from the essentials necessary to support life to the supplements which expand our experiences and make life more interesting.

Our economic demands often are closely tied to changes in the size and composition of our population. For example, as births decline, the demand for services of obstetricians declines. When this occurs, can the decline in demand for elementary school teachers be far behind - - providing, of course, that there are no intervening support props such as significant reductions in pupil/teacher ratios. In a similar vein, an aging population, both in absolute numbers and in relative terms, indicates a rising demand for health services along with all the supporting inputs necessary to sustain these greater demands. These are graphic examples of the influences of zero population growth on the projected population.

Bracketed between necessities such as health and education services and luxuries such as gold-plated toothpicks are such basics as food, clothing, shelter, and transportation. These basics contain a strong demographic component but at the same time they are capable of being embellished with superfluities which may be unnecessary for sustaining life or developing human capabilities but are attractive to peoples' tastes and life styles. As the economists put it, necessities tend to be demand inelastic. This is in contrast to the other end of the consumer spectrum where the demand for luxuries is elastic.

I have used obstetricians and elementary school teachers as symbols to dramatize the link between demographic changes - in this instance changes in the annual numbers of births and the resulting economic requirements. These two professions predominate in the two broad industries of health and education, which provide important services to society. When we sum up these two industries in terms of dollar costs, we find they have been absorbing in excess of 15 percent of the GNP. Annual expenditures for health and education run more than $200 billion a year and have a tremendous impact on many sectors of the economy far beyond the direct payment of wages and salaries to staff members.

The rapid growth in education and health activities represents the confluence of a combination of diverse factors - - the postwar baby boom; rising living standards; a reinforcement of private attitudes and public policy toward greater investments in education; and a substantial institutional change in the means and methods and roles of business and Government in financing the delivery of health services.

Since for all practical purposes we now have universal education in the land, the numbers of elementary school students are more heavily dependent on their numbers in the population than on their enrollment rates. This relationship is a little less precise for high school students. From July 1, 1977, to July 1, 1985, the total population under Series II is projected to increase 7.4 percent. At the same time, the population 5 to 13 years of age is projected to decrease by 10 percent and the 14 to 17 year group to decline by 14 percent.

The outlook for growth in the number of teaching positons is decidedly not bright. According to projections prepared by the National Center of Education Statistics, the primary demand for classroom teachers will be for purposes of replacement. For the school year beginning in the fall of 1986, the number of classroom teachers in the elementary and secondary day schools is projected at about the same level as in the fall of 1976 -about 2.4 million. To achieve even this projected employment level, the Center has incorporated into the projections an assumption related to a continuing decline to the year 1983 in pupil/teacher ratios, based on the 1954 to 1976 trend. Included in this trend projection are decreases in pupil/teacher ratios stemming from the Elementary and Secondary Education Act of 1965.

The most intensive users of health services are found among older people. By 1985, persons 60 years old and over will comprise 16.3 percent of the population compared with 15.2 percent in July 1977. While the younger population under Series II projections grows by 6 percent, the 60 years and older population will expand by about 15 percent. In absolute terms, the 60 years old and over group is projected to increase from 32.9 million in 1977 to 37.9 million in 1985, with those 70 years old and over increasing from 15.0 million to 18.1 million.

We have seen an upward trend in health expenditures as a percent of GNP and this reflects a qualitative and quantitative expansion in health activities as well as differential price changes between health and the rest of the economy. In fiscal years 1950 and 1955, health expenditures were 4.6 percent of GNP. In 1965 and 1966 fiscal years they were 5.9 percent. Preliminary estimates for fiscal year 1974 place them at 7.7 percent of GNP.

It seems very clear that the demand for health services will continue to expand in the next decade, especially in view of the sharply increased public commitments to this sector which began in the mid-sixties. During the fifties and mid-sixties, the public share of health expenditures was about one-quarter of the total. From fiscal year 1966 to fiscal year 1967, the public share of health expenditures jumped from 25.7 percent to 33.0 percent. Preliminary estimates for fiscal year 1974 place the public share at nearly 40 percent - - specifically, 39.3 percent.

One of the great, if not the greatest technological love/hate relationships of this century involves Americans and the automobile. For better or worse, America will never be the same. The automobile has penetrated deeply into the personal, family, social, economic, and political fabric of the Nation with repercussions extending beyond our borders. Because of its impact on our life, the automobile represents an excellent example of how demographic changes create a chain reaction in economic activity.

The automobile is probably the most prevalent inanimate object we have that imparts pleasure and power to teenagers, apprehension to parents, consternation to other drivers, financial headaches to inurance carriers, and a sense of economic well-being to merchants and manufacturers able to take advantage of the many potential market opportunities connected with this vehicle. Among the various States, the minimum eligible ages for an automobile license range from 14 to 18 years of age, with the modal age apparently being 16 years. If we look at the driver license statistics by age, prepared by the Federal Highway Administration, and we look at the Census Bureau's population estimates for 1973, we find the following: The proportion of licensed drivers within given ages increases rapidly from about 2 percent of the 14 and 15 years olds, to more than 40 percent of the 16 year olds, to two-thirds of the 17 year olds, and about 75 percent of the 18 and 19 year olds.

But these population figures are changing and these changes can have a strong economic impact. For instance, projections of 16 and 17 year olds indicate that there will be a drop of 1.4 million in their numbers between July 1, 1977, and July 1, 1985 - - from 8.4 to 7.0 million. If we assume approximately the same driver license rates for 1985 as we currently estimate for these age groups, we can expect a drop of about 1/2 million licenses issued to 16 and 17 year olds in 1985.

We have heard a lot about both economic and social indicators. Let me conclude by identifying one indicator that relates to both, and which may be particularly important as a leading indi-cator. Economists have been rightly concerned with the changing demographic and economic characteristics of young women.

Because I think that younger women, particularly those 20 to 24 years of age, constitute a bellwether population for purposes of projecting demographic developments as well as female participation in the labor force. The increasing activities and expanding responsibilities of younger women outside the home, their changing life styles and the subsequent claims on their time, are causing a number of major impacts.

These changes are affecting the level, timing and perhaps duration of marriages, along with the number and timing of births - -since marriage rates and first order births tend to be at their peak at the younger ages. And changes in the marriage patterns, number of births and labor force participation by younger women have a direct economic impact and can form leading indicators for the Nation's economists.

Mr. Chairman, your select committee is to be commended for focusing attention on the significant impact changes in our population characteristics are having on our society. In my judgement, Congress in the past, has spent too much time with the Government's statistical agencies discussing How and Why they collect information from Constituents and not enough time understanding how to use this information to provide meaningful programs for these very same constituents.

Thank you.

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  Statistical Policy Division, Office of Management and Budget

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PRESENTATIONS

Proceedings of a Symposium on Personal Integrity and the Need for Data in the Social Sciences.
"The Right to Privacy and the Need to Understand"
held at Hasselby Slott, Stockholm, March 15-17, 1976

Sponsored by: Swedish Council for Social Science Research

Proceedings of the International Symposium on computer-assisted cartography
"A Challenge to Cartographers"
September 21-25, 1975, Reston, Virginia

Proceedings of the American Statistical Association Annual Meeting
Automating Statistical Graphics: A Tool for Communication

August 23-26, 1976, Boston, Massachusetts

PUBLICATIONS

Winning Campaigns with the New Politics, published by Popular Library, 1971
An article on the Use of Computers in Politics

The New Style in Election Campaigns, 2nd Edition 1976, published by Holbrook Press, Boston, Massachusetts; Editor - Robert Agranoff
Basic Information Systems - PIPS

Res Publica, Summer 1974
Clutter in the Eye of the Beholder

American Libraries, November 1974, pages 557-558
Problems in Using Census Data, Before the Census Seminar-Workshop, American Library Association Annual Conference, New York, New York, July 8, 1974

Post Industrial America: Metropolitan Decline and Inter-Regional Job Shifts, published by Rutgers University, edited by George Sternleib
Shifts and Flows of Jobs and People presented at Rutgers University, March 11, 1975

1975 Combined Proceedings, Series No. 37, Edited by Edward M. Mazze
Uses of Census Data for Consumer Research, Before the Session on Uses of Census and BLS Data for Consumer Research, Fifty-eighth International Marketing Conference, American Marketing Association, Chicago, Illinois, April 16, 1975

What's New for Industrial Marketers, Before the Session on Uses of Census Data by Industrial Marketers, Fifty-eighth International Marketing Conference, American Marketing Association, Chicago, Illinois, April 16, 1975

The Census Bureau - A Numerator and Denominator for Measuring Change
Technical Paper No. 37, Issued June 1975
Aspects of the Census Bureau
The Graphic Presentation of Statistics

THE ECONOMIC CONSEQUENCES OF SUSTAINED LOW POPULATION GROWTH IN THE UNITED STATES*

by

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This statement was prepared as part of testimony given before the House Select Committee on Population on May 23, 1978 in hearings related to "Domestic Consequences of United States Population Change."

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The decline in fertility rates in the United States and other western nations that has been evident for the past several years has had the effect of rekindling interest among economists and other social scientists in the long-run effects of a diminution or even cessation of population growth. It is, of course, true that similar concerns were expressed during the period of low fertility which took place some forty years ago (Foust, 1974; Serow, 1975; Sweezy, 1975), but theoretical, technological, and methodological advances which have taken place during the intervening years have given rise to more broadly based and comprehensive analysis which permits investigation of the complex interactions that determine the economic and social consequences of population change. Additionally, the world economy is much more complex at present and many national economies are very susceptible to fluctuations in world markets (Wander, 1976).

It is the purpose of this chapter to examine the recent literature which addresses itself to the topic of the consequences of low rates of population growth. It is, perhaps, most convenient to do so by dividing the literature into two components, theoretical and empirical. The overall thrust of the paper will be to summarize and evaluate the recent contributions to the theoretical underpinnings, summarize and evaluate the empirical studies in light of these underpinnings, and finally to indicate the apparent gaps in the research to date, particularly in view of the importance of this knowledge for the formulation of population policy. This chapter, then, does not aim to forecast future population, nor to examine the determinants of the low fertility (Simons, 1976; Ruckert, 1977) which have led to the population projections which underlie the analyses discussed below.

It is perhaps appropriate to make two comments about the contents of this chapter that are not obvious from its title. As will be readily apparent, the present effort deals primarily with analyses of population stationarity within the context of the United States. The interest in this question in other parts of the developed world is probably at least equal to that found in this country. A synthesis of the writings on the economic consequences of population stationarity stemming from scholars in Europe and Oceania would be a profitable extension of the present undertaking. For an indication of the extent of these research efforts, one need only look, for example, at recent works of Stassart (1965), Bourgeois-Pichat and Taleb (1970), Sauvy (1973), Schubnell (1974a; 1974b), and O'Neill (1977).

Many nations have recently established analogs to the Commission on Population Growth and the American Future; many of these commissions have issued reports on the implications of varying rates of future population growth in their own national context. A listing of these study commissions may be found in the introduction and summary section of Berelson (1974). Furthermore, the content of the initial report of the Australian National Population Inquiry is analyzed in recent papers by Jupp (1976) and McNicoll (1976). Additionally, in September of 1976, the Council of Europe conducted a seminar dealing with the implications of a stationary or declining population in Europe.

A second point to consider is that the principal focus of this chapter is economic implications. While we have attempted to view economics in a broad sense, it should be recognized that both authors are economists, as well as demographers, by training, and may be subject to some narrowness of vision. There are certainly implications of stationary populations which are either ignored or treated summarily here which traditionally fall into the purview of social sciences other than economics. Many of these issues are treated in papers contained in the volumes edited by Westoff and Parke (1972) and by Mazie (1972). The student of the family may also find recent contributions by Blake (1972), by Mattiessen (1977), by Jurgens (1977), by Pool and Bracher (1974), and by Winger (1976) to be of interest. Furthermore, there has been a recent interest in the environmental consequences of declining population growth (Friedman, 1977), for regional planning (zu Castell, et.al., 1977; Eversley, et.al., 1977; Schwarz, 1977), and for crime rates (Markides and Tracy, 1976). Finally, several of the issues here have been raised in a slightly different context by social gerontologists. Much of the recent research in this area is summarized in pps. 289-292 of the United Nations' The Determinants and Consequences of Population Trends (1973).

I. DEMOGRAPHIC ASPECTS

The demographic consequences of a diminution in the rate of population growth have been studied extensively, particularly in the context of the United States and Europe (Coale, 1972; Frejka, 1968; Ryder, 1972, 1975; U. S. Bureau of the Census, 1972a; Guilmot and Rengerts, 1976). Notestein (1975) has gone one step further and demonstrated the demographic effects of a program aimed at reducing the current size of the U. S. population by 50%. The basic result of a lessening of growth is a marked change in the age composition of the population. To a very great extent, many of the social and economic consequences which have been hypothesized or evaluated are based, either directly or indirectly, on this change. The differences between the absolute cessation of population growth or its continuance at an absolutely low level are, in this context, relatively insignificant.

Although most of the recent literature on the demography of stationary populations has concerned the United States, Frejka (1973) and the Bureau of the Census (1971) extended the analysis to a large number of countries which represent almost the entire spectrum of the demographic transition. An important contribution to the demographic literature was made by Keyfitz (1971), who demonstrated that the time required for growth of population to cease in any closed demographic system once replacement level fertility were permanently attained depended on the degree to which the present age structure of the system differed from that of the ultimate stable-stationary system. Recently, Rogers and Willekens

(1976) extended this work to permit analysis of internal population redistribution. Thus, a country with a recent history of high rates of population growth will require a longer period of time, ceteris paribus, a reach a true state of zero population growth than will a country whose recent demographic past has been characterized by low or moderate fertility, since the age composition of the former will by young in relationship to the ultimate stationary-stable population as well as to the second country.

II. THEORETICAL DEVELOPMENTS

For the purpose of this review, many works of a general nature have been excluded, not because of any deficiencies on their part, but rather because the conclusions reached by these writers (Mayer, 1974; Enke, 1973; Hogan, 1972, Miller, 1971; Notestein, 1970) have been reached by others who presented their analysis in a more rigorous and systematic fashion. Furthermore, theoretical growth models of type developed by Solow, Swan, Niehans, and others, which allow for the existence of the stationary state are neglected here, since we are concerned with the implications of population stationarity in a definite context. The views of Hieser (1973), which are discussed below, are generally reflective of the conclusions of these models. An excellent summary of this class of model is found in chapter 4 of Pitchford (1974).

Perhaps the most basic or underlying question that can be raised regarding the probable economic consequences of lower rates of population growth is the impact on per capita income (or output or consumption). Leibenstein (1972) in his analysis of the problem seeks to answer the following: would the economic welfare of the average family be lowered to any significant extent by the year 2000 if the average annual rate of population growth in the United States were .5 to 1.0% instead of 0.0. Perhaps the most widely sweeping statement in support of the argument that economic welfare could be adversely affected by the continuation of population growth is found in many of the recent works of Spengler (1971; 1972a; 1975a; b). Although Spengler (1976) has suggested that a stationary population contains many facets which may present difficulties to the economic well being of older persons, the thrust of his basic argument is that under conditions consistent with the attainment of a stationary population the changes in the age composition will be such to increase the ratio of the labor force to the entire population. In other words, the decrease (absolutely or relatively) in the number of young dependents will more than offset the increase in the number of older dependents, although, as Spengler points out, the cost of maintaining an old dependent is substantially higher than that of maintaining a young dependent (see also Kreps, 1976). Furthermore, a decline in fertility will release a relatively large number of women from child-rearing related chores for entry to the labor force. There is, according to Spengler, no reason for employment levels to be adversely affected in the long run and output per worker should rise since capital formerly required to equip new entrants to the labor force can be utilized to increase the capital-labor ratio. This line of reasoning closely parallels that of Coale and Hoover (1958) in their seminal study of the economic effects of demographic change in developing countries.

The problems which Spengler foresees in this context are primarily institutional. One is that the aggregate mobility of labor (both occupational and geographic) may be adversely affected due to aging and the relative depletion of what Spengler calls the mobile labor reserve (younger workers). This also implies the possibility of higher structural unemployment if the composition of consumer demand is altered to any significant degree. The solution to this problem as well as that of related problems such as institutional barriers to the employment of older workers and the potential difficulties for promotion within a hierarchical structure are, again, felt to be institutional rather than economic in nature.

Similar lines of reasoning are to be found in the works of other students of the question. Wander (1972) agrees with the potentiality of mobility-related problems and adds that the relative shortage of younger workers can act to diminish wage differentials between younger and older workers (or less and more experienced workers) and, hence, impair incentives for younger workers to upgrade their occupational skills.

Phelps (1972) is in agreement with Spengler that declining population growth enhances the opportunity for increases in per capita consumption (at any given level of capital intensity) and that if the current level of capital intensity can be maintained, there will be definite increases in the level of per capita consumption, relative to that which would result from an initially similar population growing at a greater rate over time. However, Phelps feels that the rate of increase in per capita consumption will eventually come into equality with the rate of technical progress and that this rate will be lower than it would otherwise have been due to the relative decline in the number of younger workers.

The current literature may be summarized as holding the view that the problem of the cessation of population growth is basically one of adjustment to a new economic environment. At the crux of the question of economic well being is the question of the level of per capita output. This can, in turn, be subdivided into productivity of labor and capital accumulation. While Spengler argues that declining population growth enhances the opportunity to save, Phelps notes that it is likely that the Federal Reserve system will have to take action to force down rates of interest, lest the problems of capital surplus and deficiency of aggregate demand that are associated with Keynes (but see Sweezy (1975) on the general misconception of Keynes' position) arise. Wander (1972) also emphasizes the need for investment opportunity to avoid a decline in economic growth and notes that "... under a stationary population there would be more scope for renewal of the old capital supply per worker..." (p. 24). In brief, the problem is, according to Wander, the replacement of the broadening of production by the intensification of production.

The current literature contains more ambiguity that the foregoing might suggest. Leibenstein, for example, finds it difficult to analyze the effects of population change on the economy without knowing the nature and magnitude of concomitant change in other elements of the system. It is difficult to determine how innovation is affected by population growth (Kelley, 1972) and, furthermore, what guarantee exists that this innovation will necessarily be labor augmenting (Dorfman, 1972). If economic growth does continue into the future, can we expect that resources will continue to be equally productive, or will diminishing returns in the Ricardian sense set in?

Another question that is relevant here is the implications of an older work force on labor productivity, disregarding for the moment the possible variation in the capital-labor ratio. While one might theorize that, in general, the greater experience of older workers will offset their relative lack of mobility or physical strength, Leibenstein notes that what he calls the replacement effect of the skill level of the labor force might come into play. He argues that relatively large numbers of new entrants to the labor force at one time have the effect of increasing the overall level of human capital per worker. Hence, as the number of new entrants diminishes relative to the existing work force, so too does the rate of increase in human capital embodied in the labor force.

Despite this, the overall consensus of opinion thus far would appear to be that the net impact of a decline in population growth would be positive, in terms of a per capita measure of economic well being. As Leibenstein puts it, even if the effect of diminished population growth is negative in terms of marginal per capita output, this influence should be smaller than that which would result from a continuation of higher rates of population growth.

An important exception to the overall optimistic outlook is to be found in Hieser (1973), who reiterated the point made by Phelps that the rate of economic growth must eventually converge with the rate of technical progress, since the latter will be the only means of absorbing net investment. However, Hieser states that if the most common assumption, neutral technical progress, is accepted, then all required investment could be financed by amortization funds and net investment (and net profits) will fall to zero. The only way out is "... in the direction of strongly and consistently labor-saving innovations..." as this creates "artifical" population growth. However, even this effect can be nullified if workers shift preferences toward leisure and away from goods. Clark and Spengler (1977) point to an additional reason why slower population growth might inhibit the growth of real per capita income. While both the youngest and oldest segments of the population may be economically dependent, not only may the per capita costs of older dependents be greater, but also a large proportion of the dependency costs of the young are for education, which creates human capital and influences future earnings and productivity. Expenditures on the aged are, however, primarily maintenance costs and do not add to the productive potential of the economy.

A similar line of reasoning is found in Barber (1975). Barber notes that as the natural rate of growth falls in conjunction with that of the labor force and population, an increase of about two-thirds will be necessary in the capital-output ratio to bring the warranted rate of growth in line with the natural rate. This change will likely produce a sharp reduction in the marginal product of capital, and, hence, in the return to capital. As the rate of growth of output falls, the ratio of both capital consumption to gross fixed investment and the ratio of replacement capital to capital consumption will increase. This reduction in the level of net investment will be particularly severe in the residential construction sector, due to the low income elasticity of housing. All in all, Barber suggests that as the rate of growth of output falls from 4% to 2.5%, the annual level of net investment would fall from approximately 10% to about 6% of net national product.

The reasons for the disagreement between scholars on the probable consequences of a stationary population upon economic well-being are doubtless very complex. It may be noted that those who approach the problem from a theoretical perspective tend to be pessimistic, while those who approach the problem from an empirical perspective tend to be rather more optimistic. To understand the causes of this disparity, consider the features of the Harrod-Domar and neoclassical growth models, which underlie much of the theoretical reasoning.

In the former case, the rate of growth of an economy's total output is equivalent to the product of the capital coefficient (output-capital ratio) and the marginal propensity to save. Changes in either of these will affect the observed growth rate of total output. When equivalence occurs ex ante, this growth rate is termed the "warranted" rate of growth, and is an equilibrium value. There is, in this formulation, another rate of growth, called the "natural" rate of growth, which is that allowed by increases in population and technical progress. In the long run, the actual growth rate cannot exceed this natural growth rate. In the absence of population (labor force) growth, therefore, increases in per capita output, and, hence, in economic well-being, are determined solely by technical progress.

The same conclusion is reached by application of neoclassical growth theory. In its simplest form (using a Cobb-Douglas production function of first degree homogeneity, with neutral technical progress and diminishing returns), the growth rate of output is a function of the rate of technical progress and the growth rates of capital and labor. But in the long run, the growth rates of output and capital must be identical, if equilibrium is to be attained. If labor force growth is zero, then per capita output can grow only with technical progress. If one believes, as does Hieser, that potential technical progress will be channelled into directions other than production, then the long-run prognosis for increased economic well-being under a regime of population stationarity is bleak.

The empirical perspective is couched primarily in terms of the ratio of members of the labor force to non-members. From the viewpoint of labor supply, an overall population growth rate of about zero is one which maximizes the ratio of persons of working age to others. Hence, under reasonable schedules of labor force participation and employment, the labor force-population ratio is at a maximum, and the share of labor income devoted to the support of the economically dependent is approximately minimized (depending upon the level of costs per depndent as a function of the age of the dependent population).

Ambiguity regarding economic well-being remains no matter which perspective one chooses to follow. From a theoretical perspective, the unanswered question is the effects of declining population growth on the rate of technical progress, and on the neutrality of this progress. From an empirical perspective, the critical unanswered questions are the demand for labor under conditions of declining population growth and the response of individual labor force participation to changes in the demand for labor (and corresponding changes in wage levels).

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Perhaps the best summary of the current state of analysis regarding the influence of a cessation of population growth on economic well-being is expressed by Kelley (1972) who suggests that given the current state of theory and empirical analysis, a population policy based on a hypothesized significant increase in per capita consumption (as a result of the attainment of a stationary population) is unwarranted. While there seems to be little doubt that increasing growth of population leads to diminishing returns to fixed factors and a dampening of the aggregate capital-labor ratio, there are a variety of interactions about which we know comparatively little. These include the impact of population growth on the rate of technical progress; the role of population growth where the pool of investable resources depends not only on the level of income, but also on its source; the intermediate run effects of population growth where technological change is partially embodied in new capital; and, the influence of population growth on the level of human capital and productivity of the labor force. Despite the large volume and high quality of the empirical studies which will be discussed below, Kelley's remarks provide an excellent agenda for further theoretical and empirical investigation into the economic and social consequences of a cessation of population growth.

While most of the theoretical investigation has dealt with the influence of slow or no population growth on the level of economic activity, there have been other theoretical investigations into somewhat different topics. Denton and Spencer (1973) have constructed a model designed to test the cyclic effects on the economy of what they term demographic shocks. If, for example, the attainment of the replacement level of fertility were initially accomplished by a sharp reduction in the level of period fertility, a demographic shock would occur which would lead to relatively long swings in economic variables, after an initial lag. While any shock produces disequilibrating effects, the greater the relative shock, the greater the degree of disequilbration. Hence, in evaluating the economic influence of a cessation of population growth, the time path followed by fertility can be of paramount importance.

One additional theoretical development which should not be neglected is Spengler's (1972b) argument that a cessation of population growth is likely to increase upward pressure on the level of prices. The growth rate of the labor force will eventually approximate that of the entire population (allowing for adjustment of labor force participation rates). This labor force will also be relatively immobile as a result of aging. Spengler argues that unemployment rates will eventually reach the level on the Phillips curve where wages must inexorably rise. Labor will be in relatively short supply and those industries requiring additional labor will be forced either to bid them away from other industries or to attract non-participants into the work force. The first instance will require a premium for overcoming immobility, while the second requires meeting the reservations price of non-workers. In neither case is there any reason to anticipate increases in the level of labor productivity. Additionally, Spengler sees that much of the increase in demand for labor will occur in the service industries,

III. EMPIRICAL STUDIES

In addition to the theoretical developments outlined previously, the past few years have also seen the publication of a considerable number of studies dealing with particular economic or social areas which appear to be most susceptible to demographic variation. The variety of topics covered by these analyses is perhaps surprisingly limited. The primary areas which have been the subject of analysis include: 1. social security and pensions; 2. education; 3. spatial considerations; 4. labor force; and, 5. consumption. Each of these will be treated in turn.

1. Social Security and Pensions

The influence of diminished rates of population growth in the funding of social security and pensions rests on the institutional arrangements of the OASDHI program (and many private pension plans). Basically, of course, current contributions by workers to the system are utilized to pay benefits to retired persons and other beneficiaries. The basic argument is that as a population ages (a necessary consequence of reduced population growth), the ratio of workers to retired persons will decline and consequently the burden of support will be heavier on the shoulders of future generations of workers. The contribution of the present pay as you go system, without any alteration, seems to be an impossibility based on the findings of Rejda and Shepler (1973), Hogan (1974; 1976), Turchi (1975), and Clark (1976b; 1977). The first two of these studies deal exclusively with the OASDHI system, Turchi where the level of productivity has historically been low vis-a-vis that of goods producing industries. Finally, Spengler feels that governmental decision makers will recognize the increased political power of older persons and seek to redress their losses through inflation by supplemental payments which are likely to give further impetus to the forces of inflation.

expands the analysis to include private pension plans as well, while Clark goes still further and includes discussion of other government transfer systems.

The conclusions of all investigators clearly indicate that the publicly financed system is unlikely to continue in its present format under conditions of population stationarity. As Clark (1977) put it: "All of our projections indicate that the movement toward zero population growth will require even greater transfers of income to support the elderly, with the Social Security System being forced to bear much of the burden." (p. 53). Denton and Spencer's analysis (1975a) of the Canadian case yields similar conclusions.

Rejda and Shepler point to the possibility of general revenue financing as does Hogan, who indicates that increased demand for public funds to pay social security retirement benefits and medicare would be offset by the decreasing demand for what he terms "youth-related" (OASDHI) dependent and survivor benefits, aid to dependent children, and elementary and secondary education expenditures, so that the share of net national product devoted to these five categories would be slightly less under conditions of population stationarity than they were in 1970. Similar findings are presented by Van Gorkom (1976). This approach, as well as that of Rejda and Shepler clearly requires substantial change in the existing legislation. A more sweeping proposal has been made by Edgar Browning (1973) who suggests that workers be compelled to purchase bonds which the government will redeem when they retire.

A portion of Turchi's research explicity deals with those private pension plans which are actuarially funded. Turchi suggests that under conditions of no growth of either population or per capita income, net dissaving is likely to characterize the aggregate behavior of all participants in the plan. Of course, the possibility of sustained economic growth would mitigate this conclusion. Turchi also makes the point that via its implicit control over the retirement age, the social security system can contribute to the inflationary pressures suggested by Spengler. This presumably would result from an increase in the level of real benefits and/or a reduction in the age at which an individual would be entitled to receive the full monthly pension.

On balance, we may accept the findings of Rejda and Shepler, Hogan, Turchi, and Clark in that the cessation of population growth will make it extremely inequitable to continue the present mechanism for funding OASDHI retirement benefits. Given the time period which will elapse before real pressures are placed on the system, there should not be any difficulty in changing this institutional mechanism to permit either general revenue financing or something akin to Browning's retirement bond proposal. Munnell (1976) underscores this conclusion on stating that if the cost increases in the program become excessive, the financial requirements can be reduced by either allowing the replacement rate (that is, the ratio of benefits to prior earnings) to decline or extending the retirement age (or both).

Perhaps the more important issue is that of savings touched upon by Turchi, and also by Schulz (1973). A great deal needs to be done, from both a theoretical and from an empirical standpoint, on the relationship between prospective population change and the level of savings. If only the household sector is considered (and it should be recognized that the importance of this sector in terms of share of savings generated is diminishing), Winger (1976) suggests that with a stationary population the number of families whose ability to save is reduced due to increased family size will be smaller, and that periods favorable to saving over the family life cycle are lengthened. Eversley (1976) points out that, due to declining fertility, compression of the reproductive period, and greater labor force participation of married women, there exists only a short period (less than ten years) over the family life cycle when the typical family would be characterized by the one-earner, multi-dependent model which had been typical until quite recently. Further, the number of dependents even during this short span would be less than in the past.

As Kelley (1976b) notes, there is some doubt regarding the veracity of widely applied generalizations concerning the allegedly negative impact of children on household savings rates. Maillat (1976) suggests that this hypothesis does not hold up "...if it is accepted that a reduction in family size is the result of a choice (substitution) made by the parents between the number of children and the acquisition of other consumer durables as and when family income rises." (p. 16).

Even if the supply of savings is assured, there is still the issue raised by Phelps and Hieser regarding the profitability of these savings in traditional modes of investment. Maillat (1976) however, notes that changes in the dynamics of the labor force will require industry to seek more capital intensive methods of production. The future, to Maillat, must "... be envisaged in terms of adaptability to new needs. The problem that then arises is whether ... society will be capable of making the necessary changes to satisfy the various new needs." (p. 19).

2. Education

The impact of a decline in the rate of population growth on the educational system of the United States is, on the surface, fairly obvious. At the elementary and secondary level, where attendance is mandatory, rates of school enrollment will be 95% or higher, so enrollment or demand for education at this level will closely parallel future trends in the population aged 6-17. At higher levels of education, though, demand is perhaps more sensitive to economic and social conditions and one cannot be nearly as sanguine in estimating the effects of population change in enrollment levels.

Due, perhaps, to these basic differences between elementary and secondary education, on one hand, and higher education, on the other, there has been somewhat more attention paid to the latter type than the former. A comprehensive study of the future of elementary and secondary school enrollment from 1970 to 2000 under the Census Bureau's Series B and Series E population projections is found in Appleman, et.al. (1972). Their basic finding is that under either demographic scenario, the quality of education can rise (quality as measured by constant dollars expended per student).

but that if population growth can be held to a minimum, the United States can provide a much higher quality of schooling for its young people while spending a lower fraction of gross national product on education. Additionally, the rate of increase of expenditures (constant dollar) was found to be much slower in the future, no matter what the course of fertility, than has been the case in the past two decades. Morrison (1976b) adds to these findings by providing analysis of prospective changes on enrollment and the future demand for instructional personnel. Maillat (1976) notes that while the proportion of school age children in the population will surely decline by the end of the century, school needs will not necessarily be reduced. Economic, institutional, and cultural variables may be as important as demographic trends in determining the financial requirements of the educational and training system. Among these variables Maillat includes: general economic well-being, the broadening of pre-school programs, the duration of compulsory education, the scale of vocational training and the pupil-teacher ratio.

The question of the impact of slower population growth on higher education has been addressed by Dresch (1975), Evans (1975), and McMahon (1975). It should be apparent that education at this level is more clearly an example of voluntary human capital formation that is true at lower levels of education, and indeed, as Dresch points out, is subject to modification with changes in the level of economic activity and technology. However, as Evans points out, education can be an item of consumption as well as an investment good. In this sense, persons can demand additional education for its own sake or as a form of leisure, rather than acting in response to market forces pertaining to the demand for labor. In this sense, then, educational attainment can be not only a factor associated with the secular rise in the level of real income, but can be a result of this increase.

An important point which is worthy of additional study has been touched on by Evans in that future enrollment in educational institutions is likely to consist of more older persons and more part-time students. A great deal of this may well be related to the question of labor mobility which Spengler touches upon and will be covered more thoroughly below. Simply, as persons become displaced due to technological change, it will be advantagous for them to learn new skills or to upgrade the quality of their present skills. The present system of higher education may be able to meet a considerable portion of these needs, but again, institutional flexibility will be required in an institution which, on the whole, is not generally thought of as being practicularly responsive to change. Furthermore, if this situation does come about, many of the concerns expressed by Leibenstein regarding the replacement efforts of new entrants to the labor force, and the consequent upgrading of the human capital stock embodied in the labor force, will be mitigated. In any event, the potential demand for higher education for consumption and for job retraining purposes in response to technological change is an area which requires considerable further investigation.

3. Spatial Considerations

The research which is considered under this heading concerns the extent to which a decline in the rate of population growth in the United States will affect the spatial distribution of economic activity (Brinkman, 1972), the spatial distribution of population (Morrison, 1972), and the economic and social problems of the central city (Hoover, 1972). Although these studies are included under the overall heading of empirical research, it should be noted that they are somewhat more speculative in nature than many of the other studies reported here.

Brinkman's and Morrison's studies yield more or less parallel results in that they anticipate continued redistribution of economic activity and population to medium sized metropolitan areas located in the faster growing regions (South and West) of the nation. To this extent, then, they anticipate a continuation of trends which have become more and more apparent in recent years. Morrison, however, expects the tempo and volume of migration to be lowered, due to the aging of the population. It is well known that migration tends to be highly selective of age, and, as the total population ages, the relative number of events that promote migration (completion of school, first job, marriage, military service, higher education) will decline relative to the population. Morrison anticipates that the trend toward increasing suburbanization will be moderated, but not eliminated.

According to Brinkman, the areas which would be most favorably impacted by a cessation of population growth would be non-metropolitan areas, particularly those heavily dependent upon agriculture.

On the theory that a stationary population would lead in relatively short order to a stationary demand for agricultural products, coupled with increasing mechanization of American agriculture, this might appear to be an appealing hypothesis. There are, however, a variety of mitigating circumstances which suggest that this hypothesis should be subjected to more careful scrutiny prior to complete acceptance. The agricultural population per se is but a small portion of the entire rural population. While an older population may be less mobile, it is also conceivable that more of these persons might choose to re-migrate to the area of their birth or to an area far removed from the disamenities of large metropolitan areas. In recent years, long-time areas of population decline such as Northern Michigan, the Ozarks, and Central Appalachia have seen 'a turn-around' in the rate of population growth.

The real question perhaps is which outcome is most preferable. There are costs and benefits associated with every pattern of population redistribution and, as Spengler (1975a) notes: "Heterogeneity of tastes and expectations thus adds to the difficulty of arriving at a single overriding and conduct-determining conception of what is "preferable", in light of which urban size and structure, as well as population distribution, can be optimized." (p. 140).

According to Brinkman, many large cities are at a point on their average cost curve which is supraoptimal (i.e., average costs are increasing), and "In the absence of zero population growth, additional people ... would increase those costs even further and more rapidly than in smaller cities." (p. 968) Additionally, according to Hoover, these cities could move one step beyond and improve the efficiency of the delivery of their services. For example, the greater incidence of smaller families should promote more high density housing thus increasing the efficiency of urban transportation systems. There will be less need to construct new service facilities; thus, the annual level of investment can be reduced while maintaining the status quo, or can be maintained and lead to a more rapid replacement of outmoded and inadequate facilities.

A cautionary note is added by Alonso (1973) who notes that even with a national stationary population "... vast cross-movements of the population will continue, as will structural changes with society and the economy. Many of today's problems will continue to exist, and some new ones will arise." (p. 206).

In general, there would appear to be a great deal of additional research, primarily empirical in nature, that needs to be done in the area of spatial relationships and the potential consequences of a cessation of population growth. The implications for the present hierarchy of urban areas and the implications for the future would presumably lead the list. One area which could be particularly critical is that of transportation; the requirements for the movement both of individuals and of goods need to be considered. For example, one might ask will the travel demands of individuals be lessened due to aging, be increased due to greater discretionary time and income, or unaffected as these factors cancel each other out. Will demand for goods be of such variety that the locus of production will shift more towards the supply of raw materials or the ultimate market? Will this shift, if any, require substantive changes in the present transportation network?

4. The Labor Force

Questions regarding the labor force are at the very heart of the theoretical discussions we have already considered: Spengler on problems of mobility and advancement, Kelley and Leibenstein on questions of labor productivity, Hieser on the role of leisure and the general question of whether the substitution effect (of leisure for income) would grow in relative importance under a regimen of population stationarity. Clearly, such questions are at the heart of the determination of such crucial variables as the level of per capita output and the composition of final demand.

A variety of approaches have been taken to seek to provide answers to some of these questions. Johnston (1972) has provided an invaluable service by providing projections of the probable characteristics of the labor force of the future. These include, inter alia, an older, more predominately female, and decidedly more heavily white collar orientation. The first of these is merely a reflection of the aging of the population and, consequently, of the labor force. The second is a recognition of recent trends of relatively rapid increases in rates of labor force participation among women of all ages, coupled with the realization that sustained fertility decline can release many women from the traditional family-making role, if they so desire (Zollinger, 1977). The third consequence seems likely in light of the economic history of the United States and other developed countries, although there exists a considerable need to expand the scope of Johnston's projections to include a wider occupational-industry breakdown. To do so, of course, requires a concomitant effort in projection of all sectors of final demand, with recognition of current patterns of occupational demand by industry, as well as likely change in patterns in the future. Johnston, indeed, recognizes this problem in noting that while the demand for jobs requiring little education will decrease in the future, the supply of poorly educated persons will diminish even more rapidly (thus, a rapid educational upgrading is likely). However, Johnston goes on to note that the matching of the labor supply (with varying amounts of formal education) to changing relative proportions and skill requirements of particular occupations will be problematic. Johnston also suggests that this problem will be more serious under conditions of relatively high population growth; this too is a hypothesis which is worthy of considerable further investigation.

In addition to these considerations two other points regarding the labor force have been made in the literature. These concern productivity and mobility. One might be tempted to reason that growth of the labor force enhances the level of aggregate productivity, on the notion that productivity bears an inverse relationship to age after some point. Sweezy and Owens (1974) demonstrate that for countries in Western Europe there appears to be little relationship between the level of productivity and labor force growth. Additionally, Ryder (1975) notes that:

"Organizations that are successful tend to have higher growth rates and, therefore, relatively young age distributions. This may lead us to associate youth with success, without asking whether the former is a cause or a consequence of the latter." (p. 19). Ryder goes on to suggest that often the tendency is to equate productivity (or, at least potential productivity) with recency of education (and, hence age). But, he notes, "The assumption underlying this argument is that training ceases upon entry into the labor force. But such is not an institutional imperative." (p. 19). Ryder goes on to reiterate the notion expressed earlier that education of the future labor force may become more of a life line, continuous process, rather than follow the abrupt break between formal education and labor force participation which is generally characteristic of the present system.

A corollary to the foregoing discussion is the notion that the older labor force will be less responsive to change and less creative. What exactly constitutes creativity is, of course, somewhat of a moot point; however both Day (1972) and Sweezy and Owens agree that this is somewhat of a false issue in general. Actually, Sweezy and Owens' use of Nobel prize winners suggest that the age group of "maximum" creativity is more or less the pivotal age group in the transition from population growth to population stabilization, in that the share of population in the 35-44 group is relatively constant under any reasonable assessment of the future age composition of the American population. Day goes one step further in suggesting that the older age composition may actually stimulate productivity in that the problem of promotion (to be discussed shortly) may prevent an excessive number of creative individuals from being placed into administrative positions for which they have no talent; in other words, the deleterious effects of the Peter principle will be somewhat weakened.

A major need which appears to be unmet thus far is a study of the effects of declining population growth in the aggregate level of labor productivity. Ideally, such a study will take into account demographic influences on the formation of new capital as well as analyze age, sex, and educational characteristics of the labor force. Additionally, this study might also incorporate the the suggestion raised by Dorfman (1972) regarding the concept of effective workers, this may be taken as the actual number of workers adjusted (upward, presumably) for a "technical improvement factor" lessened by a factor incorporating the increasing difficulty of production, as a result of the potential onset of diminishing returns and the inclusion of social costs of production (such as pollution) in the value of output.

Serow (1976) has provided one attempt to measure the influence of the changing age composition of the labor force on labor productivity as a function of age of the labor force and capital endowments. Serow compares the male labor force consistent with census projections Series D and E projections for the period 1970-2020. The Series E projection yields a higher level of productivity as a result of a more favorable age composition and a higher capital-labor ratio, although the margin of difference is relatively slight in each instance. This effort, though, must be regarded as a somewhat uncertain first step, due to the exclusion of the female labor force and the failure to take into account prospective changes in the occupational and industrial composition of the labor force.

The question of labor mobility may be approached from a number of perspectives. One might be concerned with the movement of persons between occupations, between geographical areas, and within hierarchical structure (Spengler, 1977). As we have noted previously, Spengler and Johnston have expressed concern with "stickiness" in terms of mobility between occupations, although Ryder's and Evans' notion of education becoming more of a continuous process might ameliorate such considerations. Geographical mobility does, indeed, decline with age and the alleged role of migration as an equalizer of interregional labor supply and demand imbalances may be hampered by this fact; indeed, a projection of interregional economic growth differentials under conditions of a stationary national population would be extremely helpful in assessing the volume of net interregional migration that would be necessary within this framework. The migration: chicken or egg discussion is relevant here, of course; see Muth (1971, 1972) and Mazek and Chang (1972). The stimulation of labor migration by market and non-market mechanisms is, of course, an approach that might be utilized to cope with these problems (Harley Browning, 1975).

An interesting question which has potential significance for the question of productivity is the role played by declining population growth in the probability of individual advancement. Keyfitz (1973) flatly and unequivocably notes: "An increasing population facilitates individual mobility. One of the consequences of moving toward the inevitable stationary population is that mobility will become more difficult." (p. 335). It seems at least plausible that such a situation, if left uncorrected, will enhance worker disgruntlement and have adverse consequences for labor productivity. Both Keyfitz and Spengler (1972a) suggest replacing the step-like process of economic and social advancement with a process more analogous to a ramp, although Keyfitz suggests that individuals are not likely to be stimulated by newly contrived finely cut divisions of alleged points of status, and that "... people may become more concerned with pay and the goods they can buy than with rank and title. Our increasing command over goods may compensate for diminishing command over people." (p. 348) Kander (1976) adds that many of these difficulties may be attributable to temporary or structural shortage of work, rather than to an abundance of older workers blocking career paths.

Another possibility for dealing with the problem of individual mobility is the manipulation of ages at entry to and exit from the labor force (Browning, 1975; Ryder, 1975). Browning notes that early departure should have greater impact due to the obvious linkage of age and seniority. One possible drawback to this suggestion concerns the intensification of the problems associated with social security retirement funding and infaltionary pressures which have already been discussed. Again, the interaction of earlier retirement with these variables is a topic worthy of additional research. On the other hand, there exists considerable sentiment among social gerontologists for lengthening working life, or at least in providing greater flexibility in the customary retirement age (Schulz, 1973). Clark (1976c) also points out that a rise in the normal retirement age would also relieve much of the economic burden discussed previously. His projections suggest that in such a situation the proportion of total income needed to support the elderly would approximate that experienced in 1975.

5. Consumption

There seems to be a myth that there exists within the private sector of the economy widespread support for continued population growth because a cessation of this growth would also spell the end to economic growth (Enke, 1973). While the only support that we could find for this conclusion came from Sinclair Lewis' novel Babbitt, there does exist the justifiable question of how a decline in population growth will affect: 1. the absolute volume of consumption; 2. the volume of consumption relative to savings; and, 3. the distribution of consumption to competing industries. All of these questions have been addressed by recent studies.

In the long run, of course, the absolute volume of consumption will be less under conditions of population stationarity than population growth due to the sheer weight of numbers. Such a statement is, of course, essentially gratuitous, because there is some point at which the efficiency of production is maximized, and beyond that range, diminishing returns and increasing costs set in. While there is little doubt that the rapid population growth of nineteenth-century American provided the basic impetus for the transformation of the nation from the agrarian society of 1800 to the industrial society of 1900, one is rather strongly compelled to agree with Kelley (1972) in his assertion that the impetus provided by population growth to the realization of economies of scale has probably diminished in quantitative importance over time, possibly to the point of insignificance. The real question is the relationship between rates of population growth and levels of per capita consumption.

Resek and Siegel (1974) have examined consumer expenditure patterns under a variety of demographic conditions. They suggest that the rate of population growth affects consumption via an influence in the age level of the population and on the level of per capita income. Their findings suggest that slower population growth enhances the level of per capita income and hence per capita consumption. Similar findings were reported previously be Serow (1972) and in the projections prepared by the Bureau of Economic Analysis for use in the research reports of the Commission on Population Growth and the American Future (Appleman, et.al., 1972; Howard and Lehmann, 1972; Jones, 1972). Furthermore, Resek and Siegel's empirical findings support the contention of Spengler (1972a) that the savings rate will increase under conditions of slow population growth.

Most of the studies in this area have been directed toward changing shares among industries of the total volume of consumption (Resek and Siegel, 1974; Eilenstine and Cunningham, 1972; Espenshade, 1978; Howard and Lehmann, 1972), or for particular industries: agricultural commodities (Serow, 1972), health and welfare (Appleman, et.al., 1972; Denton and Spencer, 1975b), and housing (Jones, 1972;

Marcin, 1974). We have treated education as a separate area for our purposes, but to some extent it could have easily been included under the heading of consumption.

The degree to which prospective changes in the rate of population growth will affect the composition of consumer demand seems to be determined by the degree of aggregation utilized in the analysis. Looking at the rather broad categories utilized by the Consumer Expenditure Survey of 1960-61, Eilenstine and Cunningham summarize their findings as follows: "The consumption patterns of a stationary population are sufficiently like those associated with a growing population, so that there is no real reason to fear economic disorder from this source with the cessation of population growth." (p. 230). Similar findings are reported by Resek and Siegel, but they noted that with lower population growth, there is "... a change in the distribution of the sectors toward durables at the expense of services, with little effect in the relative share of nondurables." (p. 290).

Using a somewhat different analytical technique, Espenshade (1978) arrives at results parallel to those just mentioned. The basic data set utilized are actual consumption expenditures by category in the United States from 1929 to 1941 and from 1946 to 1970. These data are analyzed in a multiple regression framework which uses relative prices, previous levels of consumption (by category) and measures of age composition and household size as independent variables. The net differences in the composition of consumption between a continuously growing population and one approaching the stationary state are negligible. Espenshade notes that "In general, the changes in consumption spending occasioned by a stationary population are counteracted by the increase in per capita total consumption accompanying the reduction in fertility."

The degree of aggregation in this study, like those of Eilenstine and Cunningham and Resek and Siegel, is rather great. Espenshade suggests that a greater degree of disaggregation of expenditure categories "... might show demographic influences hidden in the aggregations that were used." Recent findings of Denton and Spencer (1976) also address themselves to this point. By utilizing time series analysis of Canadian data and cross-sectional analysis of international date, they find "... aggregate consumption is not affected directly by variations in average household size or in the age distribution of the population ... Of course, this does not imply an absence of direct household and age effects on particular categories of consumption, but only on the aggregate." (p. 93, emphasis in the original). The sorts or changes that might be expected with a greater degree of disaggregation have recently been outlined by Wander (1976). Three points are made:

1. Demand for such goods and services as food and clothing for children, toys, sporting facilities, and nurseries will decline unless new domestic or foreign markets are found;
2. Due to a greater number of small, adult-only households, demand for higher priced consumer durables, personal effects, recreation, entertainment, adult education, and the like will rise;

> 3. Increases in per capita income will shift demand from short-to long- lasting goods, from poorer to higher quality goods, from essentials to luxuries, and from the conventional to the new (p. 10).

Similar findings were reported by Howard and Lehmann, although the analysis was done in terms of specific industries, rather than segments of final demand. Generally speaking, their findings show that industries which cater to those segments of the economy most directly benefited by increasing amounts of discretionary time and income will be the best off. While they note that many individual business concerns will have to adjust their market strategies and/or product mixes, the well-being of industry as a whole will not be much affected by population change.

The influences of differential rates of population growth in the demand of welfare and health services have been studied by Appleman, et.al. It should first be noted that "welfare" in this context refers only to public assistance payments of various forms. Their results are somewhat tentative, but suggest that the dollar volume of welfare required to lift all persons above the poverty guideline will at best slowly decline and may even increase. Generally, the findings suggest that the aggregate needs of the poor are relatively insensitive to differential population growth, and may even be adversely affected by slow growth if that situation does, in fact, lead to a higher level of per capita income. Eversley (1976) suggest that it is possible that poverty and welfare problems might increase since a portion of the population most at risk (i.e., the elderly) will increase and they will have, on the average, fewer children to look after then.

This raises the important issue of the implications of population stationarity for income distribution. The only contribution to this area to date has been that of R. S. Heeren (1976). The preliminary conclusion which Heeren reaches is that while the evidence suggests that there is not likely to be "... a significant increase in income inequality, this stability may conceal a possible shift in the composition of the poverty population. In particular, the proportion of the poor who are aged 65 and over may become larger in the decades ahead. *Whether these results will occur depends on the validity of the assumptions traditionally made by students of income distribution theory.*" (p. 51, emphasis added). It is clear that there are important theoretical and empirical issues that need to be resolved in this area. Given that income redistribution is at least nominally a goal of governmental policy, it is crucial that research be conducted to ascertain how prospective population changes will affect the levels of income of different subpopulations and the extent and nature of differential effects. One is reminded of Phelps' (1972) contention that an increase in real wages is beneficial to those relatively well endowed with human capital, while a decline in real profits harms those relatively well endowed with non-human capital. Since under conditions of a stationary population, labor will be a relatively scarce resource, then it would seem reasonable to conclude that wages will rise in relative importance as a source of total income while income from profits on capital will fall, in a relative sense. Because wage and salary income represents a larger proportion of total income in lower and middle income groups, the relative increa [illegible] might be anticipated to enhance the overall distribution [illegible]. Furthermore, because the aged are less likely to be active members of the labor force, their relative economic position will be weakened, as Heeren suggested. These are contentions that can, and should be subjected to considerable empirical testing in order to establish whether a trend toward slower population growth will create more or less income inequality.

The work of Appleman, et.al. regarding the demand for health services (defined in their analysis only as vists to physicians and dentists as well as utilization of hospitals) shows that relatively rapid growth between 1970 and 2000 would require substantially higher total outlays than would slower population growth. Given that the difference in total population size between the Series B and Series E projections is about 50 million persons by 2000, this is not a surprising result. The authors suggest that future demand for health services will be primarily a function of economic conditions and the availability of health insurance, rather than population growth (on the individual level). While this is, in itself, a subject of additional research, one is also curious to know whether the differing age structure of the stationary population would have any quantitative importance. A longer period analysis of Canadian data (Denton and Spencer, 1975b) suggests that population change is likely to have considerable impact on the cost of health care, due to fertility variation and its influence on age structure.

The area of demand for housing is clearly one which is highly responsive to changes in economic and demographic conditions. One need only look at the fluctuations in the number of new housing starts in recent years to see the veracity of this in the short run. Of interest here, of course, is the longer run situation, particularly as a response to demographic change. Studies of this effect have been undertaken by Jones (1972), Marcin (1974), and Morrison (1977a). Jones' effort is somewhat hampered by the fact that his time horizon ends with the present century. Although the Series B and E projections differ considerably in terms of total population size and age composition by 2000, the number of households does not vary greatly, since only a small fraction of households are headed by persons under age 30 (that is, those born during the projection period). Marcin's results are somewhat more comprehensive in that his time horizon extends to the middle of the next century, when economic and demographic factors have been allowed to interact for a considerable period of time. While Marcin's results are very useful in terms of illustrating the prospective nature of change in the demand for housing (in terms of the size and composition of demand), it would seem that further work in this area could usefully be coupled with the analysis of population and income redistribution which have been suggested previously. Morrison's analysis is more general than these, but includes discussion of differential mortality and changing household status as well as age composition and population and income redistribution.

The final consumption-related topic to be included is Serow's (1972) study of demand for agricultural commodities. This study allows for economic-demographic interaction over an extended period of time, but is hampered, as are many of the aforementioned studies, by the assumption of constancy in marginal propensities to consume over time. It would appear that useful additional work could be undertaken in the determination of changes in these propensities in light of the demographic-economic change implicit in the attainment of stationary population.

The discussion this far has focused entirely on the role of the household sector and its demand for goods and services. Similar questions can be raised regarding the industrial and governmental sectors, as well. In the former case, analysis might well take an input-output approach, allowing variation in consumer demand to affect, both directly and indirectly, the demand for the output of industry components. While the governmental sector is implicitly represented in many of the analyses suggested previously (social security, education, health, transportation), there exists considerable need for additional work on the demands of this sector in light of prospective changes in the composition of the population and its rate of increase.

IV. POLICY IMPLICATIONS AND ADDITIONAL SUGGESTIONS FOR FURTHER RESEARCH

The policy questions pertaining to the attainment of a stationary population are not of the variety which ask "whether", but rather concern "when"? As Coale (1968) has noted "In the long run, and average rate of increase of zero is not only desirable but inevitable." (p. 469). Thus, the questions to be asked are: 1. when should population growth cease (or what is the appropriate population optimum) (Ryder, 1972); 2. what time horizon should be employed to achieve this goal (that is, what is the appropriate time path to follow to minimize social and economic disruption); and, 3. what instruments should be employed to attain the desired result?

The first question is really the old issue of the optimum population which has never been satisfactorily resolved (see Zinam, 1974). Are we better off with the higher ultimate stationary population achieved by allowing population to grow for additional periods, or should growth cease at once? As Coale notes "... the choice is inevitable not only for ourselves, but also for future generations" (p. 469) and that a decision to end growth at once or relatively quickly will do our descendents "... a fav that they will never appreciate." Given that the age distribution of the ultimate stationary-stable population is invariant, more research is needed into the question of the differential effects of size differences in this ultimate population.

The second question is in many ways the same as the first. The crucial point is that in this case we need to know much more about the economic and social implications of alternative paths to the stationary population. It is probable that a very abrupt attainment of stationarity would have a severely disequilibrating effect in the short and intermediate run, but would have a smaller size than the ultimate stationary-stable population achieved by a more gradual transition. Thus, we need to know more not only about the cost and benefits of alternative ultimate population size, but also the costs and benefits of alternative paths to population stationarity as well.

In this connection, it is important to realize that as population growth rates settle down to approximate zero, current (period) rates of fertility are very likely to fluctuate rather than remain perfectly constant (Wander, 1977). The measurement of costs and benefits should also include some provision for differences in the period and amplitude of these oscillations. Recent work for the Belgian economy by Wijewickrema, et.al. (n.d.) suggest that the period of oscillation is more important than the amplitude, and that economic disruption is relatively less severe with a short (13 years) or long (52 years) cycle, than with a medium term (26 year) one.

Finally, what means should be employed to meet whatever goal is chosen? Davis (1973) notes that the technology is simple and currently on hand. The motivational and educational aspects are of compelling importance; Davis adds: "They (people) do not want runaway population growth either, but they want it painlessly. They want a solution that leaves them their freedom to have five children if they wish. In short they want a miracle." (p. 28-29).

Ryder (1973) lists a variety of policies available to governments to reduce the course of population growth: 1. education and exhortation; 2. economic incentives and disincentives; and, 3. complusion. Further research is needed to establish the consequences, costs, and benefits of these alternative approaches (and combination of approaches, where feasible). In choosing among these alternatives, and in evaluating them, it is also imperative to bear in mind H. J. Heeren's (1974) comment that "... every kind of population policy must link up with existing demographic developments and trends, rather than try to run counter to these trends." (p. 252).

There remains one more policy-related issue to raise and this is the question of international effects of population stationarity. The answer would appear to lie in the entire demographic context in which the stationarity occurs. If stationarity characterizes the population of one or a few countries while in the remainder population growth persists then questions of the international distribution of goods and raw materials come into play. Certainly, the foreign trade sector can be affected in somewhat different ways under different assumptions of worldwide demographic trends. Furthermore, since the importance of foreign trade differs among national economies, the results are apt to differ substantially. Hence, cross national analysis of this question is another area in which fruitful research could be initiated.

Barber (1975) has made some assessment of the relative economic effects of a stationary population on presently developed countries. He argues that the effect of a cessation of population growth on capital spending would be somewhat different for countries in North America or Oceania than would be the case in Western Europe or Japan. This conclusion is based on the fact that most of the output increases in the former group in recent years are attributable to increases in employment, while in the latter group most of these increases are attributable to increased productivity. Furthermore, Western Europe and Japan have, according to Barber, greater remaining potential for shifting resources into spheres of industrial activity which is more productive. The degree of productivity in North America and Oceania is already quite high and the extent to further reorganization of industrial activity will enhance productivity is quite limited.

With large scale warfare of the future likely to be conducted more and more by mechanical devices, it is possible that the economic and military aims of the state might best be fostered by smaller rather than larger population,vis-a-vis those of competing states. In other words, if one chooses to adopt a neomercantilist perspective of the appropriate aims of the state, the appropriate policy regarding population in the current context might be the precise opposite of mercantilist population policy. Kelly (1976) suggest that there is a range of population between the smallest and largest which will yield output sufficient for both subsistence and defense needs. Within this range, a country might apply policies to increase or decrease population, or to alter the age composition, but presumably would try not to move its population out of this range. While Organski and Organski (1961) state that population size is one determinate of national power, the level of economic development and the efficiency of the national government are also of critical importance. In view of the relationship between population growth and income, discussed previously, it is far from apparent that population growth implies a concomitant increase in national power (for a different view, in the context of developing countries, see Hendershot (1973).

The interest of the size and growth rate of the population of one country vis-a-vis another has had a long history on Western Europe, especially in France. Calot and Hecht (1976) recently reviewed pro-natalist policies actually adopted in Europe. In reviewing such measures as economic incentives, disincentives, and charges on the availability of contraception and abortion, they conclude "... the ways to encourage fertility are to make further provision in the traditional field of family benefits, with a greater effort in favour of the 3rd child and subsequent children, and to try to make it easier for mothers to combine family responsibilities with a job." (p. 18). Even this, in their view, is unlikely to make much difference in light of past reactions of the public to such experiments. Government policy, in the view of Calot and Hecht, would be better advised "... to try to control the consequences of unfavorable fertility trends than to count on being able to correct such developments if and when they occur." (p. 19).

Van de Kaa (1976) came to a similar conclusion in remarking that current levels of fertility "... reflect to a very large extent the choice of the population in the matter as to how an optimum quality of life can best be achieved under the circumstances currently prevailing in Western Europe." (p. 12). Governments, therefore, concludes van de Kaa, should be slow to ask the citizenry to subordinate their individual interest to the perceived collective interest unless the collective interest (in this case, a higher rate of population growth) can be clearly shown to exist.

In addition to attempts to stimulate fertility, another proposal which has been advanced for stimulating population growth, where government policy had determined that such was advisable, is immigration. Sica (1976) raises the question "... what are the long-term chances of maintaining the population by means of immigration?" (p. 2). He concludes that these chances depend upon two fundamental conditions: first, the host country must be able to rely on immigrant pools sheltered from political, economic, and social vicissitudes; second, the host country must agree to become polycultural. Sica suggest that both conditions are unlikely, the first due to political reasons, the second, for historic aversion of European nations to polyculturalism ("but nearly all the countries of Europe cherish the idea of the single-culture nation state" p. 3). The degree to which immigration as a means of sustaining economic growth will be successful is questioned by Barber (1975), who notes that in the case of exporting nations such as Canada and Australia the rate of growth in their markets (particularly the United States, Western Europe and Japan) may well be the decisive factor.

In closing, a variety of research topics have been suggested in the present and foregoing sections. The proper approach to some of these requires a micro-perspective while that of others requires a macro-perspective. What is of overriding importance is that these undertakings be carried out in a manner which will allow the result to be compiled and evaluated as a body of knowledge rather than isolated studies operating in the abstract (de Sandre, 1976). A careful selection of models (see Arthur and McNicoll, 1975) and assumptions is needed to ensure comparability.

REFERENCES

Alonso, William. 1973. Urban Zero Population Growth. Pp. 191-206 in Olson and Landsberg.

Appleman, Jack, William P. Butz, David H. Greenberg, Paul L. Jordan, and Anthony H. Pascal. 1972. Population Change and Public Resource Requirements: The Impact of Future United States Demographic Trends on Education, Welafre, and Health Costs. Pp. 189-295 in Morss and Reed.

Arthur, W. Brian and Geoffrey McNicoll. 1975. Large Scale Simulation Models in Population and Development: What Use to Planners? Population and Development Review 1: 251-265.

Barber, C.L. 1975. Some Implications of the Move towards Zero Population Growth in Developed Countries upon the Level of Capital Expenditures. Ottawa: Economic Council of Canada.

Berelson, Bernard (ed.). 1974. Population Policy in Developed Countries. New York: McGraw-Hill Book Company.

Blake, Judith. 1972. The Microfamily and Zero Population Growth. Pp. 55-68 in College of Home Economics. Iowa State University.

Brinkman, George L. 1972. The Effects of Zero Population Growth on the Spatial Distribution of Economic Activity. American Journal of Agricultural Economics 54: 964-971.

Browning, Edgar K. 1973. Social Insurance and Intergenerational Transfers. The Journal of Law and Economics 16: 215-237.

Browning, Harley L. 1975. Speculations on Labor Mobility in a Stationary Population. Pp. 56-74 in Spengler (1975c).

Bourgeois-Pichat, Jean and Si-Ahmed Taleb. 1970. Un taux d'accroisement nul pour les pays en vioe de developpement en l'an 2000: Reve ou realite? Population 25: 957-974.

Calot, Gerard and Jacqueline Hecht. 1976. Long-term Population Policies. Strasbourg: Council of Europe.

Clark, Robert L. 1976a. Age Structure Changes and Intergenerational Transfers of Income. Durham: Center for the Study of Aging and Human Development, Duke University.

______. 1976b. The Impact of Zero Population Growth on the OASDHI Program: Further Comment. Journal of Risk and Insurance 43: 322-324.

______. n.d. The Influence of Low Fertility Rates and Retirement Policy on Dependency Costs. Raleigh: North Carolina State University, mimeo.

______ and Joseph J. Spengler. n.d. Changing Demography and Dependency Costs: The Implications of New Dependency Ratios and their Composition. Raleigh: North Carolina State University, mimeo.

Coale, Ansley J. 1968. Should the United States Start a Campaign for Fewer Births? Population Index 34: 468-474.

______. 1972. Alternative Paths to a Stationary Population. Pp. 589-603 in Westoff and Parke.

_____ and Edgar M. Hoover. 1958. Population Growth and Economic Development in Low-Income Countries. Princeton: Princeton University Press.

College of Home Economics, Iowa State University. 1972. Families of the Future. Ames: Iowa State University.

Davis, Kingsley. 1973. Zero Population Growth: The Goal and the Means. Pp. 15-30 in Olson and Landsberg.

Day, Lincoln H. 1972. The Social Consequences of a Zero Population Growth Rate in the United States. Pp. 659-674 in Westiff and Parke.

de Sandre, Paolo. 1976. Critical Study of Population Policies in Europe. Strasbourg: Council of Europe.

Denton, F.T. and B.G. Spencer. 1973. A Simulation Analysis of the Effects of Population Change on a Neoclassical Economy. Journal of Political Economy 81: 356-375.

_____. 1975a. The Demographic Element in the Burden of Government Old Age Pensions. Hamilton: Department of Economics, McMaster University.

_____. 1975b. Health-Care Costs when the Population Changes. Canadian Journal of Economics 8: 34-48.

_____. 1976. Household and Population Effects on Aggregate Consumption. Review of Economics and Statistics 58: 86-95.

Dorfman, Robert. 1972. Comment. Pp. 85-89 in Morss and Reed.

Dresch, Stephen P. 1975. Demography, Technology, and Higher Education: Toward a Formal Model of Educational Adaptation. Journal of Political Economy 83: 535-569.

Eilenstine, Donald L. and James P. Cunningham. 1972. Projected Consumption Demands for a Stationary Population. Population Studies 26: 223-231.

Enke, Steven. 1973. Population Growth and Economic Growth. The Public Interest 32: 86-96.

Espenshade, Thomas J. n.d. How the Trend toward a Stationary Population Affects Consumer Demand. Tallahassee: Center for the Study of Population, Florida State University.

Evans, V. Jeffrey. 1975. Higher Education in the Stationary Population: A Comment on North Carolina's System. Pp. 44-55 in Spengler (1975c).

Eversley, David. 1976. Demographic Asoects of Welfare Policies. Strasbourg: Council of Europe.

Foust, James D. 1974. ZPG? Hansen, Myrdal, and Keynes Revisited. Mississippi Valley Journal of Business and Economics 10: 24-42.

Frejka, Tomas. 1968. Reflections on the Demographic Conditions Needed to Establish a U.S. Stationary Population Growth. Population Studies 22: 379-397.

______. 1973. The Future of Population Growth. New York: John Wiley and Sons.

Guilmot, Pierre assisted by Monique Renaerts. 1976. Demographic Introduction. Strasbourg: Council of Europe.

Heeren, H.J. 1974. Declining Population Growth and Population Policy. International Social Science Journal 26: 244-254.

Heeren, R. Stanley. 1976. The Relationships between Age Structure and Income Distribution. Durham: Center for the Study of Aging and Human Development, Duke University.

Hendershot, Gerry E. 1973. Population Size, Military Power, and Antinatalist Policy. Demography: 10: 517-524.

Hieser, R.O. 1973. The Economic Consequences of Zero Population Growth. The Economic Record 49: 241-262.

Hogan, Timothy D. 1972. Implications of Zero Population Growth. Arizona Business 19: 3-11 (December).

______. 1974. The Implications of Population Stationarity for the Social Security System. Social Science Quarterly 55: 151-158.

______. 1976. The Impact of Zero Population Growth on the OASDHI Program: Comment. Journal of Risk and Insurance 43: 317-321.

Hoover, Edgar M. 1972. Reduced Population Growth and the Problems of Urban Areas. Pp. 527-542 in Mazie.

Howard, John A. and Donald R. Lehmann. 1972. The Effect of Different Populations on Selected Industries in the Year 2000. Pp. 141-158 in Morss and Reed.

Johnston, Denis F. 1972. Illustrative Projections of the Labor Force of the United States to 2040. Pp. 159-187 in Morss and Reed.

Jones, David. 1972. Projections of Housing Demand to the Year 2000, Using Two Population Projections. Pp. 297-332 in Morss and Reed.

Jupp, Kathleen M. 1976. The Borrie Report: Background, Findings, Recommendations. Population and Development Review 2: 65-77.

Kelley, Allen C. 1972. Demographic Changes and American Economic Development. Pp. 9-44 in Morss and Reed.

______. 1976. Savings, Demographic Change, and Economic Development. Economic Development and Cultural Change 24: 683-69[illegible].

Kelly, William J. 1976. Economic and Demographic Determinants of the Viability of Nations. Journal of Peace Studies 2: 57-75.

Keyfitz, Nathan. 1971. On the Momentum of Population Growth. Demography 8: 71-80.

______. 1973. Individual Mobility in a Stationary Population. Population Studies 27: 335-352.

Kreps, Juanita M. 1976. Economics of a Stationary Population: Implications for the Elderly. Durham: Center for the Study of Aging and Human Development, Duke University.

Leibenstein, Harvey. 1972. The Impact of Population Growth on the American Economy. Pp. 49-65 in Morss and Reed.

Maillat, Denis. 1976. Population Growth and Economic Growth. Strasbourg: Council of Europe.

Marcin, Thomas E. 1974. The Effects of Declining Population Growth on the Demand for Housing. St. Paul: North Central Forest Experiment Station.

Mayer, Lawrence A. 1974. It's a Bear Market for Babies, Too. Fortune 90: 134-137, 206, 210, 212 (December).

Mazek, Warren F. and John Chang. 1972. The Chicken or Egg Fowl-Up in Migration: A Comment. Southern Economic Journal 39: 133-139.

Mazie, Sarah Mills (ed.). 1972. Population Distribution and Policy (vol. V, Research Reports, Commission on Population Growth and the American Future). Washington: Government Printing Office.

McMahon, Walter W. 1975. Economic and Demographic Effects on Investment in Higher Education. Southern Economic Journal 41: 506-514.

McNicoll, Geoffrey. 1976. The Borrie Report: Issues of Population Policy in Australia. Population and Development Review 2: 79-89.

Miller, Herman P. 1971. Population, Pollution, and Affluence. Business Horizons 14: 5-16 (April).

Morrison, Peter A. 1972. The Impact of Population Stabilization on Migration and Redistribution. Pp. 543-560 in Mazie.

______. 1976a. Demographic Trends that Will Shape Future Housings Demand. Santa Monica: The RAND Corporation (P-5596)

______. 1976b. The Demographic Context of Educational Policy Planning. Santa Monica: The RAND Corporation (P-5592).

Morss, Elliott R. and Ritchie M. Reed (eds.). 1972. Economic Aspects of Population Change (vol. II, Research Reports, Commission on Population Growth and the American Future). Washington: Government Printing Office.

Munnell, Alicia H. 1976. The Future of Social Security. New England Economic Review: 3-28 (July/August).

Muth, Richard F. 1971. Migration: Chicken or Egg? Southern Economic Journal 38: 295-306.

_____. 1972. The Chicken or Egg Fowl-Up in Migration: Reply. Southern Economic Journal 39: 139-141.

Notestein, Frank W. 1970. Zero Population Growth. Population Index 36: 444-452.

__________. 1975. Negative Population Growth: How to Go About It? Population Index 41: 567-569.

Olson, Mancur and Hans H. Landsberg, (eds.). 1973. The No-Growth Society. New York: W. W. Norton and Company.

Organski, Katherine and A.F.K. Organski. 1961. Population and World Power. New York: Alfred Knopf.

Phelps, Edmund S. 1972. Some Macroeconomics of Population Levelling. Pp. 71-84 in Morss and Reed.

Pitchford, J. D. 1974. Population in Economic Growth. Amsterdam: North-Holland.

Pool, D. Ian and Michael Bracher. 1974. A Note on Implications of Canadian Family Formation in the Near Future. Canadian Studies in Population 1: 117-122.

Rejda, George E. and Richard J. Shepler. 1973. The Impact of Zero Population Growth on the OASDHI Program. The Journal of Risk and Insurance 40: 313-325.

Resek, Robert W. and Frederick Siegel. 1974. Consumption Demand and Population Growth Rates. Eastern Economic Journal 1: 282-290.

Rogers, Andrei and Frans Willekens. 1976. Spatial Zero Population Growth. Laxenburg, Austria: International Institute for Applied Systems Analysis (RM-76-25).

Ryder, Norman B. 1972. A Demographic Optimum Population for the United States. Pp. 605-622 in Westoff and Parke.

______. 1973. Two Cheers for ZPG. Pp. 45-72 in Olson and Landsberg.

______. 1975. Notes on Stationary Populations. Population Index 41: 3-28.

Sauvy, Alfred. 1973. Croissance zero? Paris: Calmann-Levy.

Schubnell, Hermann. 1974a. Probleme des Null-Wachtums einer Bevölkerung. Mitteilungsblatt der Österreichischen Gesellschaft für Statistik und Informatik 4: 43-60.

__________. 1974b. Volkstad oder Neue Chancen: Ursachen und Auswirkungen des Geburtenrückgans. Saarlandische Arbeitnehmer 22: 153-160.

Schulz, James H. 1973. The Economic Impact of an Aging Population. The Gerontologist 13: 111-118.

Serow, William J. 1972. The Implications of Zero Growth for Agricultural Commodity Demand. American Journal of Agricultural Economics 54: 955-963.

______. 1975. The Economics of Stationary and Declining Populations: Some Views from the First Half of the Twentieth Century. Pp. 18-33 in Spengler (1975c).

______. 1976. Slow Population Growth and the Relative Size and Productivity of the Male Labor Force. Atlantic Economic Journal 4: 61-68 (Spring).

Sica, Mario. 1976. Advantages and Disadvantages of Recourse to Immigration in a Situation of Population Decline. Strasbourg: Council of Europe.

Simons, John. 1976. The Interpretation of Survey Data on Attitudes to Family Size. Strasbourg: Council of Europe.

Spengler, Joseph J. 1971. Declining Population Growth Revisited. Chapel Hill: Carolina Population Center, University of North Carolina.

______. 1972a. Declining Population Growth: Economic Effects. Pp. 91-133 in Horss and Reed.

______. 1972b. Prospective Population Change and Price Level Tendencies. Southern Economic Journal 38: 459-467.

______. 1975a. Population and America's Future. San Francisco: W.H. Freeman and Company.

______. 1975b. Stationary Populations: Economic and Educational Implications. Canadian Studies in Population 2:

______. (ed.) 1975c. Zero Population Growth: Implications. Chapel Hill: Carolina Population Center, University of North Carolina.

______. 1976. Stationary Populations and Changes in Age Structure: Implications for the Economic Security of the Aged, Durham: Center for the Study of Aging and Human Development, Duke University.

Stassart, Joseph. 1965. Les avantages et les inconvenients economique d'une population stationnaire. The Hague: Faculte de Droit, Liege et Martinus Nijhoff.

Sweezy, Alan R. 1975. The Natural History of the Stagnation Thesis. Pp. 34-43 in Spengler (1975c).

______ and Aaron Owens. 1974. The Impact of Population Growth on Employment. American Economic Review (Papers and Proceedings) 64: 45-50.

Turchi, Boone A. 1975. Stationary Populations: Pensions and the Social Security System. Pp. 75-94 in Spengler (1975c).

United Nations, Department of Economic and Social Affairs. 1973. The Determinants and Consequences of Population Trends: New Summary of Findings on Interaction of Demographic, Economic and Social Factors (Population Studies, no. 50). New York: United Nations.

U. S. Bureau of the Census. 1971. The Two-Child Family and Population Growth; An International View. Washington: Government Printing Office.

__________. 1972. Illustrative Population Projections for the United States: The Demographic Effects of Alternate Paths to Zero Growth. Current Population Reports: Population Estimates and Projections. Series P-25, no. 480. Washington: Government Printing Office.

van de Kaa, D. J. 1976. Long-Term Population Policies in Western Europe. Strasbourg: Council of Europe.

Van Gorkom, J. W. 1976. Social Security--The Long Term Deficit. Washington: American Enterprise Institute for Public Policy Research.

Wander, Hilde. 1972. The Decline of the Birth Rate in Western Europe: Economic Implications. Bloomington: International Development Research Center, Indiana University.

__________. 1976. Demographic Aspects of the Active Population. Strasbourg: Council of Europe.

Westoff, Charles F. and Robert Parke, Jr. (eds.) 1972. Demographic and Social Aspects of Population Growth (vol. I, Research Reports, Commission on Population Growth and the American Future). Washington: Government Printing Office.

Winger, Max. 1976. Demographic Aspects of Sociology and Family Micro-Economics. Strasbourg: Council of Europe.

Zinam, Oleg. 1974. Optimum Population Concept and the Zero Population Growth Thesis. Economia Internazionale 27: 320-333.

TESTIMONY PREPARED FOR HOUSE SELECT COMMITTEE ON POPULATION

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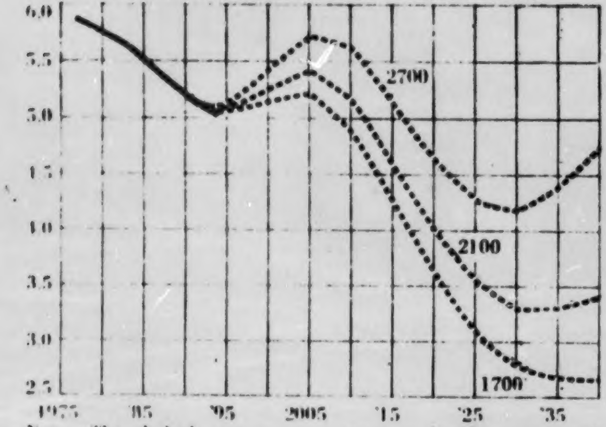
Impact of continued low United States fertility on defense capability.

Submitted by:

ROBERT X. de MARCELLUS
COLONEL FARNG

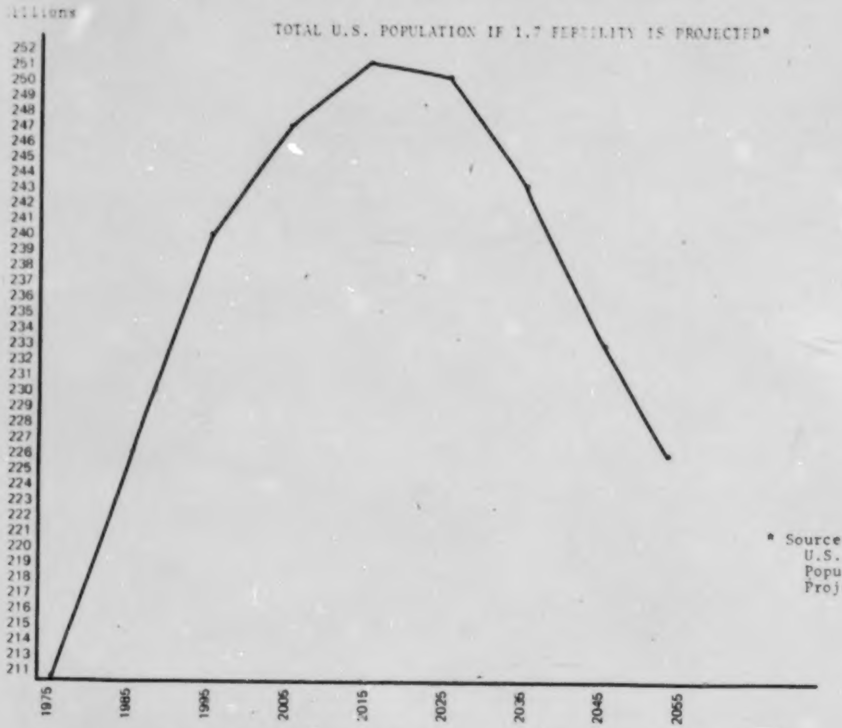
11 April 1978

RATIO OF POPULATION AGES 16-64 TO POPULATION AGES 65 AND OVER



Note: The dashed curves are projections based on assumed eventual stabilization of the total fertility rate at the levels of 2700, 2100, and 1700 per 1000 women.

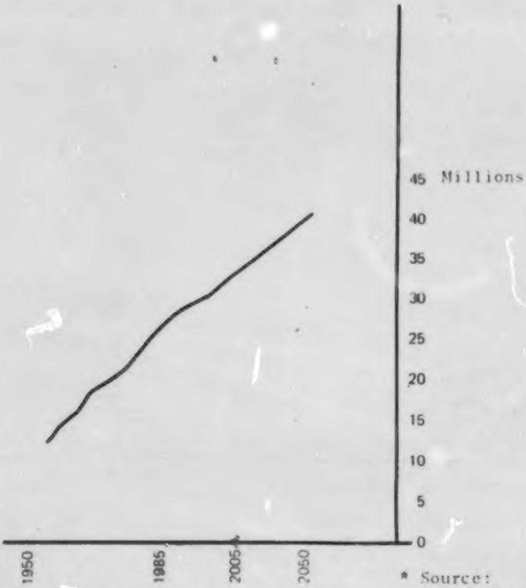
Source: Bureau of the Census.



TOTAL U.S. POPULATION IF 1.7 FERTILITY IS PROJECTED*

* Source:
U.S. Bureau of the Census
Population Estimates
Projections Oct 197

U.S. Population over 65 years of age.*

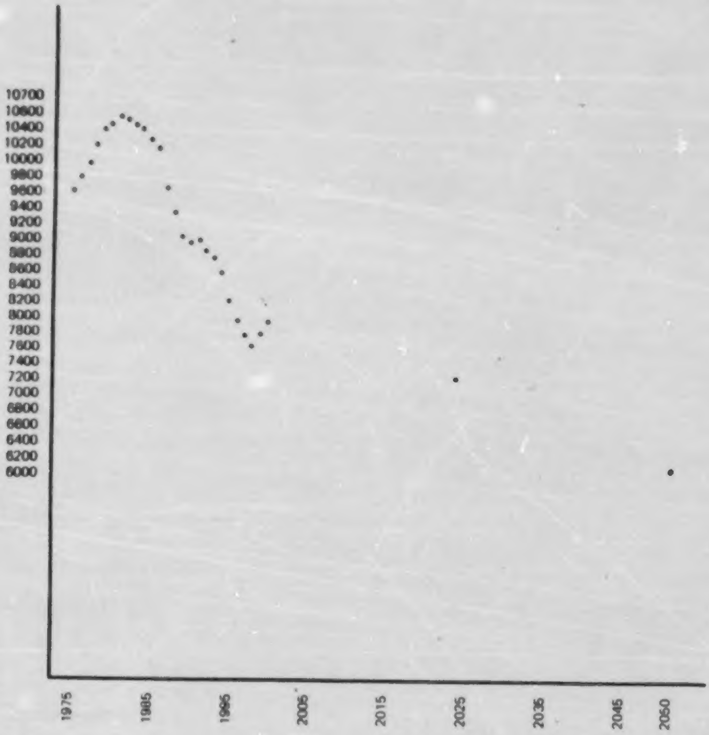


* Source:
U.S. Bureau of the Cencus
Population Estimates &
projections, Oct 1975

S. Manpower, 20-24 Years of age if fertility of 1.7 is norm for future.

NUMBERS IN THOUSANDS

Source:
U.S. Bureau of the Cencus
Population Estimates &
Projections, Oct 1975



TESTIMONY PREPARED FOR HOUSE SELECT COMMITTEE ON POPULATION

Impact of Continued Low Fertility on Defense Capability

By COLONEL ROBERT X. de MARCELLUS FARNG

I deeply appreciate the opportunity to present my views on the effect of low national fertility on future United States defense capabilities. I am convinced that continued low fertility will have a drastic impact on U.S. military capability.

This view was developed while I was a student at the United States Army War College and the result of extensive research I did on the subject in writing a research paper in the military research program of the War College course. The paper was subsequently the basis for a recommendation by the Army's Strategic Studies Institute to the Department of the Army that a full DA study of the problem be made.

At the time of my selection for the U.S. Army War College I was assigned as a Field Artillery Group Commander in the Florida National Guard and am now assigned as the Inspector General for Florida. In civilian life I am a marketing and advertising executive and have written for publication on Demographic matters.

GENERAL:

The Select Committee has already heard testimony to the fact that United States fertility is now at 1.8. This is considerably below the replacement level (or ZPG level) of 2.1 I believe the members of the committee are aware that the rate of decline of U.S. fertility since the 3.5 and 3.7 levels of the fifties is the most precipitous ever recorded. The effects on defense of this decline cannot be separated from the effects of even lower fertility levels among our NATO allies, since it is the over-all failure in Western fertility that will impact Western defense capability.

For example, West Germany has a fertility of 1.25. This fertility means that unless a rapid reversal in fertility or heavy immigration takes place, the West German population will decrease by 25% at each 20 year generation. Each year the West German population is smaller than the preceding year. For example, in 1975 there were 225,000 fewer West Germans than the peak of 62,054,000. If this trend continues, West Germany will soon become one of our largest liabilities rather than one of our greatest assets.

As the committee is probably aware, the significance of the failure in U.S. and Western fertility has been hidden up till now by several factors. The first is the fact that even after the population's fertility has fallen far below the replacement level its over-all size will continue to increase for several decades due to the increase in life expectancy that we have experienced. Secondly, the popular press has been inundated with predictions of standing room only population because many writers and misinformed VIPs have projected past population growth, due in large measure to increased longevity and the doubling up of generations, as a straight line projection into the future regardless of fertility trends.

Manifestly, a nation whose fertility is far below the replacement level cannot replace present generations, let alone "double" in any number of years.

Thirdly, difference between birth rate and "fertility" is not fully understood. Hence if, for example, the "baby boom" children all had a child this year, in the long-heralded but not forthcoming "ripple effect", a great upsurge in the birth rate would result for this year. However, if these mothers neverhad any more children, the long-term generational fertility would be 1, and the population would halve itself at the next generation.

The committee is no doubt aware that estimates of U.S. population growth have always erred on the side of overestimation. Within the last decade estimates which placed the population of the U.S. at over 300 million, as high even, as 362 million by year 2000, have now been reduced, in the most recent Census Bureau estimates, to 262 million. Even this figure is high as it is based on an assumption of a return to a replacement level fertility of 2.1. No rationale is offered for this assumption. If present fertility continues the population will be only 245 million.

Robert L. Clark of the University of North Carolina feels that the fertility will remain below the replacement level. He cites such social phenomena as falling marriage rates, rising divorce rates, deferred childbearing, the upswing in single parent, two wage earner and individual households, higher education levels, increased work experience among young women, their greater career opportunities, the high cost of rearing and educating children and the ever-increasing useage of effective birth control techniques. To the items listed by Clark can be added the rapidly increasing number of abortions that accounted for over 25% of all the children that would otherwise have been born this year. (1,100,000 reported abortions in 1977).

In analyzing the effects of low fertility on military capabilities, there are two principal areas of concern. The first is the direct effect in Manpower limitations, the second is the economic difficulty of meeting defense costs.

MANPOWER PROBLEMS:

Defense department projections indicate that the military manpower pool of 18-year-olds will decline by 15% of present size by 1985 and 25% by 1980. While the military is less manpower intensive than it was in earlier periods, this short-fall will still be most detrimental. It will be exceedingly difficult to continue present Volunteer Army policies. Not only will there be fewer men from which volunteers can come, but the developing labor shortage at that time will bid up the market. A Volunteer Army in that environment will become increasingly expensive, and a significant decline in the quality of the volunteers can be expected. A return to the draft would ease the problems of quality and cost, but would in no way ease the crises in the labor market, this causing added resistance to a draft. These problems, however, while very real, would be secondary to the economic impact on defense.

ECONOMIC PROBLEMS:

As the committee knows, technological developments, as well as monetary inflation, have increased the cost of defense at an alarming rate. At the same time, the need for social expenditures has increased rapidly. Continued low fertility will greatly intensify this competition for resources and must impact on defense capability.

Ten years ago payments to the elderly and federal retirees amounted to $46 billion or 23% of the $201 billion federal budget. The proposed 1979 administration budget would allocate $203 billion dollars in an array of programs for the elderly or 40% of the $500 billion budget. This will be spent on the approximately 24 million elderly citizens over 65 years of age in 1979. *(See Last Page)

Within the next twenty-two years, however, the number of elderly will grow by 29% to 31 million. If the elderly's slice of the budget showed the same proportionate increase, it would rise by 12% from the current 40% to 52% of the budget. However, since the 23% increase in the number of elderly in the last ten years brought a 74% increase in their share of the budget (from 23% to 40%) it is likely that the actual percentage of the budget devoted to the elderly would significantly exceed 52%. If the elderly's share of the budget increased at the same rate as over the past ten years it would account for 100% of the budget by the end of the century.

Even a conservative view, that the elderly's share of the budget will be 52% in twenty years, implies that the additional 12% will come from the current 24% allocated to defense; defense monies constituting the largest source of discretionary funds. We must, therefore, anticipate that defense spending will be reduced to not more than 12% of the budget in two decades.

Only a very rapid increase in the real per capita income and rate of economic growth could so enlarge the national wealth as to allow such a rise in spending on the elderly without severely effecting the proportion of the budget devoted to defense. Such economic growth will be greatly hampered by the growing energy shortage and the effect of falling fertility. Certain business analysts have seen the lower fertility bringing economic gains. It has been suggested that there will be more discretionary income in families; less public expenditure on schools. (Though it is not clear how such a reduction will not be costly to the economy).

However, economists such as Joseph J. Spengler, Professor Emeritus at Duke University and Boone A Turchi of the Department of Economics at the University of North Carolina point out that any advantages would be temporary and that the burden of taxation on the dwindling working population needed to support the growing old elderly population will progressively cripple the economy. The specific impact of continued low fertility on each sector of the econqmy is presently being studied by Professor Turchi in a macroeconomic model being designed at Chapel Hill.

The Strategic Studies Institute at Carlisle Barracks has requested that the model be designed to provide information on the following questions bearing on defense capability:

1. Proportion of the national budget available for defense.
2. Proportion of the national budget available for research and development outside the defense budget (NASA, Energy, etc.).
3. Effect of increased number of aged citizens on the national budget's "discretionary" expenditures. (Assuming that the proportion of "fixed" expenditures would grow, leaving less fiscal flexibility to national leaders).

4. Increase in proportion of national budget required to pay old age benefits.

A number of specific factors bearing upon defense capabilities will be developed, for example:

1. Increased pressure in the labor market for those in draft age.
2. Effect on industrial capacity for key products. Would demand and capacity for steel production as a proportion of the national economy diminish? It would seem that a major curtailment in construction would mean that we would lose some of this industrial capacity and that a measurement of the economy in dollars alone may obscure a loss in industrial mobilization potential.
3. Effect on national industrial plant investment.
4. Effect on capital formation.
5. Inflationary effect.
6. Effect on government's ability to borrow. What savings will be available for future war bond drives?

While answers to these questions and others bearing on the economy as a whole have not yet been derived from the program, it is clear that the impact of low fertility will be significant, possibly tragic.

The committee will be interested to know that in 1951 defense spending in Britain accounted for 24.1% of the budget and social security for 11.8%. By 1973 these figures had reversed and 12.6% of the budget was devoted to defense and 17.3% to social security. This change, which I believe is most prophetic of the change taking place in our own country, came as a result of the increased support requirements for an ever larger elderly segment of the population. Britain, having lost its fertility sooner than the United States, felt the increasing burden of an unbalanced number of old people in comparison to its still economically active population earlier than has the United States.

In viewing our low fertility and its effect on the economy and defense capability, I feel it would be helpful to the committee to consider the fact that some elements of our population have a fertility far below 1.8. For instance, the Anglo-Saxon white Protestant fertility is about 1.5, a level at which this segment of the population will have lost 75% of its number within the next 100 years. The Jewish population which has contributed such an enormous amount to science, technology, and other disciplines has an even lower fertility and is truly an endangered species. For example, at New York City's present fertility rates, 10 English speaking New Yorkers will be represented by only 1.27 in five generations.

As we view the many social and economic factors that have brought about the extremely low fertility in all Western industrialized societies, it is extremely difficult to perceive any reason for a major reversal.

If we consider that the economic growth of the United States has historically been associated with population growth, and that the slowing of economic growth today coincides with a falling fertility, it is prudent to admit that there can be no assurance that real economic growth with an ageing and then declining population can be achieved in sufficient measure as to allow current level defense spending in the face of mushrooming social costs for the aged. Indeed, it appears all too apparent that our experience will be the same as Britain's and that drastic cuts will have to be made in real defense spending.

If our experience is the same as Britain's, we will have to markedly reduce the size of our armed forces and tailor national objectives accordingly. Unless massive immigration to Europe and the United States takes place, or a marked upturn in fertility is achieved, it appears that NATO - Britain and Germany in particular - will be unable to field meaningful forces in two decades. Furthermore, the defense of Western Europe by the United States will at that time be impossible because of the very constrained military budget as support of the elderly population becomes increasingly expensive.

In this environment we will have to consider extensive and painful changes in national strategy. Defense of the Western

Hemisphere with far greater reliance on the manpower of Latin America will transform the United Stated from a world power to a regional one.

AN APPRAISAL OF FUTURE STRATEGY

Structuring a defense force with half of today's dollars would involve fateful decisions, and may require a strategy that involves the following:

1. A pull-back from Europe; hopefully with negotiated reductions in Pact forces, if not, then unilaterally.
2. Fast-declining reliance on European allies who, for the most part, will be faced with a similar and larger problem and who may opt for a neutral position when U.S. troops depart.
3. Increased reliance on "massive retaliation" as the "cheapest" form of defense rather than on the conventional force capability of "flexible response."

Brazil may emerge as the most powerful economic and military ally of the United States. In the Pacific, the U.S. may have to retrench its presence and influences to the island perimeter of the Western Pacific. Increasingly the security of the United States will lie in maintaining the balance of power between the USSR and the People's Republic of China.

The low birth rate of Eastern Europe and European Russia will be a somewhat offsetting factor to low fertility in the U.S., Japan and Western Europe. While the overall birth rate of the USSR in still high because of their non-European peoples, an internal demographic imbalance may in itself cause stresses within the USSR.

The United States will be unable to afford Middle East strife. Combined with a worsening energy crisis, the economic constraints of our ageing population will force increasing support of Arab positions. A U.S. presence in Africa or South Asia will be impossible.

In short, if the United States is forced to adopt within two decades a defense budget proportional to only half of today's because of the diversion of defense dollars to care of the larger population of elderly, drastic revisions in strategic thought will be required. "Fortress America" and a completely nuclear strategy may well be the only defense the United States can afford.

If U.S. fertility remains at present levels, the U.S. armed forces two decades from now may be very similar to those of the United Kingdom's today - strategic nuclear deterrent forces backed by a very small Army force. A U.S. active Army of six divisions with a larger force of National Guard units may be the structure of the Army in 20 years. The smaller cost of Guard forces will become increasingly attractive. The Navy, as it is no longer called upon to project its force to world-wide commitments, and in the face of drastic budget cuts, may retire its carriers in favor of its nuclear and ASW role. These would appear the unattractive outlines that defense spending cuts will force on strategy.

These are not pleasant prospects. They can be mitigated in some degree by even greater reliance on reserve components, a search for more economical weapons systems, and a return to conscription and nominal military wages. However, in broad outline, American power cannot be maintained over the long term without greatly increased fertility.

It is instructive to recall that prior to the end of the Roman Empire in the 200 years following Marcus Aurelius, the population of Roman Europe fell in a ratio of 6 to 1. A falling fertility was, more than any other factor, the cause for the fall of the Roman Empire and the end of Roman civilization. Precipitous as was the fall in Roman fertility, it fell far less fast than has that of the United States and Western Europe.

May I suggest to the committee that the results of such studies as the macroeconomic model being built at the University of North Carolina will be indispensable to serious efforts to formulate long range population policy. I wish to further suggest that a stable U.S. and Western Europe defense is not possible in the twenty year and longer term unless fertility is increased and the growing imbalance between retired elderly and working young is rectified. / The experience of France over many decades and now the efforts being made in Eastern Europe indicate that only if the Congress takes strenuous measures to support increased fertility can the future of the population and the nation be as assured.

I am aware, as is the committee, that no one can foretell future fertility. There are no complete or proven explanations for past swings. It is for this reason that the Census Bureau has adopted a replacement level fertility as a future model, for want of something better.

However, I wish to underscore the fact that a rising fertility will bring nothing worse than the problems of economic growth already experienced. A continuation of our present fertility, or a further decline, must bring great economic problems and the end of the United States as a world military power. Any population policy, therefore, must be geared to making sure that a fertility increase does take place.

I know that this committee is fully aware of the present public reaction to increased Social Security Taxes and the demands that they be reduced. However, the committee is also aware that whether these funds come from social security payroll taxes or from general revenue, or from the defense budget; ultimately these monies must be raised through taxes or defense capability reduced. As H.L. Mencken said, "there is no free lunch." It is only through arresting the growing imbalance between the retired and the working by a return to higher fertility that a true solution can be found.

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*These figures are based on those compiled by the Washington Bureau of the Miami Herald. They are markedly higher than some published by some of the government agencies because they include indirect costs amounting to 15 billion dollars due to such items as tax credits to the elderly, agencies' payments to the elderly not under HEW, such as VA pensions, food stamps to the elderly, meals on wheels, etc. as well as pensions paid by the federal government to those not yet 65 years of age, such as military and civil service retirements.

Statement of Dr. Joe D. Wray
Population Studies Center
Harvard University

Before the
Select Committee on Population
U.S. House of Representatives

May 25, 1978

Reports on
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Number Nine

August 1971

Population Pressure on Families:

Family Size and Child Spacing

By Joe D. Wray, M.D., *Field Staff Member for the Rockefeller Foundation, Bangkok, Thailand.*

Today's alarming rates of population growth, appropriately called the population explosion, are produced by the complex interaction of a great many factors. The effects of this growth at global or national levels have only rather recently become a matter of serious concern; the factors which produced the growth have been operating in the West for a long time. It is worth noting, though, that these factors, operating on families, began to produce population pressure at the family level long ago and that there is evidence that people in large numbers recognized the threats to their families imposed by excessive growth.

Let us recall that in the West birth rates began to decline at least a century ago and that this followed not long after death rates began to fall. If this had not occurred, if fertility rates* had remained at their previous high levels, then some western countries might have had a "population explosion" some time ago.

THIS REPORT documents the effects of family size, child spacing, and birth order on the physical and intellectual development of children and examines the relationship that exists between the number and spacing of children and maternal health and family welfare. It is reprinted from volume 2, chapter 11, of the book Rapid Population Growth: Consequences and Policy Implications, *published in July 1971 for the National Academy of Sciences by The Johns Hopkins Press. The book was prepared under the direction of Dr. Roger Revelle of the Harvard University Center for Population Studies by a study committee of the Office of the Foreign Secretary, National Academy of Sciences, with the support of the United States Agency for International Development.*

We are grateful to the author and the publisher for permission to include this paper in the Reports *series. In the interest of expediting publication of this issue, we have reproduced the page proofs from Dr. Wray's chapter.*

The explosion did not occur. Something happened to prevent it. Decades ago, long before contraceptive technology had approached the convenience or effectiveness demanded today, long before family planning services were readily available, when, in fact, publication of information concerning contraception sometimes brought persecution and imprisonment, fertility rates declined. At a time when national population policies were unheard of and a concern for the long-term effects of population growth was limited to a small band of Malthus' disciples, birth rates fell almost as rapidly as death rates.

What does this mean? It can only mean that thousands upon thousands of families wanted fewer children and managed, somehow, to achieve their goal—so successfully that the aggregate effect produced declines in fertility at national levels. How or why did it happen? Demographers have invoked a variety of explanations. Not long ago Freedman summarized them this way:

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*The number of births per 1,000 women of childbearing age.

> The large declines in fertility in economically developed countries in the nineteenth and twentieth centuries probably are unprecedented. The changes in specific intermediate variables producing the decline varied somewhat from country to country. Most sociologists and demographers would probably agree, however, that the basic causes of the general decline are: (a) a major shift in functions from the family to other specialized institutions, so that there was a decrease in the number children required to achieve socially valued goals, and (b) a sharp reduction in mortality which reduced the number of births necessary to have any desired number of children. (1, p. 53)

While this analysis of causal factors may certainly be correct, it is probable that the great mass of people who made the decisions that produced the phenomenon based their decisions on less abstract rationales. Given the methods of limiting family size available at the time, it seems reasonable to assert that powerful and sustained motivating forces must have been at work to produce the results in large population groups that we recognize in retrospect as unprecedented declines in fertility. It seems equally reasonable to assume that this motivation must have come from the everyday life situation of the people involved–from an immediate awareness of problems felt acutely at the family level, problems clearly recognized as arising from having too many children.

Returning to this century–to this year–and examining the phenomenon so prevalent in many parts of the world of extra-legal abortion, we are driven to a similar conclusion. We know now that the overwhelming majority of such abortions are performed because married women want desperately to limit their family size and have no effective or accessible alternative. Only powerful and immediate motivating forces can account for this decision. They must come from intensely felt pressure at the family level, pressure explicitly associated with family size and the clearly anticipated effects–detrimental effects–associated with having "another mouth to feed."

If this speculation is correct, if it is true that population pressure felt at the family level produced widespread declines in birth rates in industrialized countries and high abortion rates in others, there has been surprisingly little attention paid to it and equally little systematic study of the effects of this pressure at the family level. There have, at least, been recent expressions of the need for such study. Stycos, at a conference on teaching family planning to medical students, referred specifically to the need for more exact knowledge of the health consequences of family size in order to appeal to humanitarian interests in motivating medical students (2). Berelson has also called attention recently to the need to utilize such knowledge in educational campaigns to motivate families (3). If we are to overcome the "tragedy of the commons"* described by Hardin (4), then ways are needed to persuade individuals that their own interests and those of their families, as well as the interests of the community or society at large, require limitation of family size. Similarly, Taylor, in his suggestions for a "five stage population policy" (5), emphasizes the need to go beyond the population that is merely waiting for services and attract those who are not so fully convinced. In both of these cases, *knowledge of the consequences of excessive numbers at the family level would be invaluable.*

PRESENT KNOWLEDGE ABOUT THE EFFECTS OF FAMILY SIZE AND BIRTH INTERVAL

There is a substantial body of evidence concerning the relation between family size, or number of children, and birth interval and a number of factors relevant to health. This evidence was obtained by a diverse array of investigators studying a variety of problems over a period of many years. The studies were carried out in many countries, in all stages of economic development, and among various social classes within a given country. The approaches varied: some were retrospective (based on currently obtained data describing past events), others cross-sectional, still others prospective or longitudinal (identifying children at birth and following them to see what happens).

Each health indicator that has been examined in these studies is produced by complex, and usually obscure, interactions of numerous causal factors. There is undoubtedly a considerable amount of overlap—the same set of interacting causal factors involved in producing various effects. In no case is the total interaction clearly understood, but certainly family size and birth interval operate only as parts of the causal web. In the great majority of these studies, family size and birth interval were among many factors examined as independent variables in relation to a given problem, and not the primary concern of the investigators. Therefore, the interaction between family size, for example, and other relevant variables, such as socioeconomic status is often unexamined. In spite of this, the general pattern of effects suggested by the evidence available is so consistent that it seems reasonable to consider that deficiencies in some studies are, in a sense, compensated for by the adequacy of other studies. We need not, in other words, be compelled to disregard the findings of an investigator who did not control for a given variable, if the findings of another investigator who could control for that variable show similar results.

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*To illustrate the fact that a given act may have consequences that seem beneficial to the individual but are harmful to society at large, Hardin uses as an example "the commons," or common pasture. A farmer with two cows adds one more; he gets 50 percent more milk, but his one cow may be enough to push the total population of cows to such a level that the commons may be permanently damaged by overgrazing. The parallel problem with regard to population is obvious.

The consistent trend of the consequences associated with either increasing family size or decreasing birth interval is striking and uniformly negative. When the full spectrum of these effects is seen, it is, in fact, alarming. No general survey or summary of the evidence concerning these effects could be found in the literature, although one portion of the spectrum, the effects on the survival of fetus and child, was reviewed recently by Day (6).

My intention here is to cover the full spectrum. Where possible, minimum essential information about the methodology of the study is given and relevant examples of the findings obtained are reviewed. The attempt is comprehensive but by no means exhaustive; it is impossible to review all available studies or all the findings of a given study. The chief criterion for inclusion here has been the clarity of the relationships shown by the data. No studies showing significant benefits associated with large families were excluded; none was found, although there were a few studies which showed no effects, either positive or negative.

THE EVIDENCE CONCERNING HEALTH CONSEQUENCES OF FAMILY SIZE

Studies which have examined the effects associated with family size, number of children, number of siblings, or parity of the mother (the number of children born to a mother) are far more numerous than those considering birth or pregnancy interval. Because of the thoroughness and variety of the evidence concerning family size, it will be considered first.

The Effects on Children

Much of the data that are available concern the effects on children and are derived from studies of mortality and morbidity of various types, including malnutrition and anomalies in growth and intelligence.

Family Size and Morbidity. Several factors commonly associated with increased incidence of illness are also associated with increased family size. Among these, economic limitations, crowding, and generally poor sanitary conditions stand out. The stage is set for causal interaction.

The longitudinal study of families of all social classes in Cleveland, Ohio, carried out by Dingle and his associates (7) showed as clearly as any the association between family size and illness. They examined the incidence of various common illnesses by family size. As an example, their findings with respect to infectious gastroenteritis are shown in Table 1. Not only does the total number of episodes per family increase, as might be anticipated on a purely arithmetical basis, but also the number of illnesses per person per year

TABLE 1

Incidence of Infectious Gastroenteritis
by Family Size, Cleveland
Ohio, 1964

Family Size	Person Days	Family Days	Number of Family Illnesses	Illnesses per Family/Year	Illnesses per Person/Year
3	38,991	12,997	104	2.92	0.97
4	269,604	67,401	86[illegible]	4.71	1.18
5	399,450	79,890	1,671	7.63	1.53
6	201,396	33,566	1,044	11.35	1.89
7	36,491	5,213	189	13.23	1.89
8	31,104	3,[illegible]8	180	16.90	2.11

Source: Dingle et al. (7).

increases. Leaving aside a consideration of the precise causal role of family size per se in producing illness, it is obvious that family size increases "pressure" on the larger families simply because of the number of illnesses, more need for maternal care, more expenses for treatment.

One of the most important kinds of morbidity to be found in preschool children throughout the world is that produced by malnutrition (8, 9). In a study of malnutrition in the preschool child population of the rural town of Candelaria, Colombia, my former colleague, Dr. Alfredo Aguirre, and I found that family size is one of the factors involved in the etiology of malnutrition there (10). In a house-to-house survey of the town, the total population of preschool children were weighed and measured and their mothers interviewed. The nutritional status of the children was determined on the basis of internationally recommended standards (11-14). We found 1,094 children under 6 years of age in the survey; 284 of these children were classified as having first degree, 148 second degree, and 14 third degree malnutrition—a total of 41 percent malnourished in varying degrees.

We then examined the data for associations between various social and demographic factors in the families and malnutrition in the children. The effects of family size were explored by grouping all of the children according to the number of living children in their families. The proportion of malnourished children (of all degrees) in each group was then calculated. The results of this analysis are shown in Table 2, where the trend is obvious: children from larger families are more likely to be malnourished than those from smaller families.* In this case, the difference in the prevalence of malnutrition

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*Some of the other factors, both social and economic, that were implicated in the cause of malnutrition will be described in the next-to-last section of this chapter. It should be mentioned here that we found in the Candelaria study that as laboring men in

TABLE 2

Malnutrition in Preschool Children Grouped According to the Number of Living Children in Their Families, Candelaria, Colombia, 1963

Number of Living Children/Family	Total Number of Children	Malnourished Children	
		Number	Percent
1	75	24	32.0
2	185	63	34.1
3	178	73	41.0
4	204	83	40.7
5	136	57	41.9
6	122	57	46.7
7	62	25	40.3
8 or more	106	49	46.2

Source: Wray and Aguirre (10).

in children from families with four children or less (38 percent malnourished among 642 children) compared with those from families with five or more (44 percent malnourished among 462 children) is statistically significant—highly unlikely to result from sampling fluctuations.*

Quite recently, our students at the Ramathibodi Hospital Faculty of Medicine in Bangkok found a similar relationship in Thai preschool children. In an investigation of the total preschool population of a semirural community near Bang Pa-In, 212 children under the age of 6 years were examined. It was found that 58 percent of those from families with four or more children were malnourished, while 42 percent of those from families with three children or less were so classified (15). This difference was also statistically significant.

Robertson and Kemp carried out one of the few direct studies of family size and child health among children in the group called Coloured in Cape Town, South Africa (16). They sought an association between family size and malnutrition and deaths from causes related to malnutrition. An "unselected control to show the size of families" was obtained from births during 1 week of February, 1962.

Their findings that are particularly relevant here were based on the distribution of families according to the number of living children per family. They

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a developing country get older, their income rises but little while family size increases steadily. They seem to attempt to compensate for this by spending a larger proportion of their income for food, but per capita expenditures for food actually fall, and malnutrition in the children increases (10, pp. 95-96).

*That is to say, "p" < .05. The probability of such a difference arising from sampling fluctuations, or from chance, is less than 5 chances in 100.

compared the proportion (percentage) of families of different sizes in their two test groups and in the control and by this method found no evidence of significantly increased risk in children from larger families either of malnutrition or of death from diseases associated with malnutrition.

They concluded that "The size of the family appears to have little effect per se on the health of the younger members, families being 'at risk' because of poverty, accompanied by poor parental capacity" (16, p. 893).

Because, as noted, there are few such studies and the findings of Robertson and Kemp in this study are so different from those of others, a methodological problem involved here deserves careful scrutiny. In treating their data they compared the distribution of differing numbers of children per family in three groups of *families*, each selected quite differently: the first, because there was a malnourished preschool child in the family, the second because a child in the family died of a specified cause, and the third because the mother delivered a newborn infant during a defined period of time. What is needed, however, if we are to understand the effect of family size is a comparison of the prevalence of malnutrition or of death rates in a substantial population of *children* grouped according to family size. Only then can a valid statement be made concerning the presence or absence of increased risk associated with family size.

This point has been spelled out by Chen and Cobb in their paper, "Family Structure in Relation to Health and Disease" (17), in which they state:

> With regard to sampling method, the most important thing is to check that the sampling procedure is the same for cases and controls. It is, for example, wholly inappropriate to compare the distribution of family sizes among patients with the distribution reported in a census. The reason for this is evident on consideration of an hypothetical population consisting of equal numbers of families with one child and ten children. If one picks families and asks how many children there are, one has an equal chance of picking large families or small families and concludes that the average size is 5.5 children. If, on the other hand, one picks individuals and asks them how many siblings they have, the probability of picking a person from a large family is ten times as great as the probability of picking one from a small family. In this situation, one would conclude that average size of family is 9.2 children. . . .
>
> The soundest way to approach this entire problem is, of course, to examine attack rates of disease by size of sibship, but this can only be undertaken when a survey of a total population or sample of the population has been conducted. (17, p. 549)

Family Size and Mortality. Morbidity, or illness, is but a continuum which, in the end, may result in death. There is an abundance of data concerning the association between family size and mortality rates. In one study of a rural population, Gordon and Wyon (18, 19) have described their findings obtained during long-term studies of population dynamics in villages in the Punjab of India. They followed the 1,479 children born in their study villages from 1955 to 1958 and thus could calculate accurate mortality rates in these children. When mortality rates were correlated with maternal parity, which they accepted as a sufficient indicator of family size, they obtained the results summarized in Table 3.

TABLE 3

Mortality of 1,479 Children Born in Eleven Punjab Villages, by Parity of Mothers, India, 1955-1958

Parity of mother	1	2	3	4	5	6	7-12	Unknown	Totals
Number of births	230	209	210	197	165	136	326	6	1,479
Neonatal mortality (deaths/1,000 infants up to 28 days)	95.7	52.6	81.0	30.5	84.8	51.5	95.1	166.7	73.7
Infant mortality (deaths/1,000 infants up to 1 year)	171.8	116.5	144.9	123.7	171.8	164.2	206.3	166.7	160.6
2nd-year mortality (deaths/1,000 pop.)	75.8	15.6	24.2	92.4	95.7	76.9	95.0	0.0	67.9

Source: Wyon and Gordon (19).

Their figures show clearly that mortality in those infants tended to increase with family size. Among second- or later-born children the trend is most apparent, though in the first month of life, before family or environmental circumstances are as likely to affect the newborn, differences are not great. After 1 month they are striking, and it is important to note that the effect is relatively much greater in the second year of life. Mortality rates for the *first* year among seventh- or later-born children are not quite twice as high as those in second-born children in the first year of life; in the *second* year they are over six times as great.

Similar observations have been made in several countries at the other end of the development scale. Some of the most impressive evidence to be found concerning the association between family size and infant mortality comes from the studies of Morris, Heady, Morrison, and their associates in a study of *all* the births that occurred in England and Wales during 1949 and 1950. They matched the information on the death certificates of all children dying under a year of age with that contained in the birth certificates of the same children. In the case of children born in 1949, they were able to do the same for deaths in the second year. Thus they could examine the association between infant mortality and a number of variables, including the particularly pertinent ones here of maternal age and parity and of social class of the family. Since they were dealing with a huge population–1,322,150 single, legitimate live births–associations that might never have been apparent in smaller groups stand out clearly. The wealth of detailed findings is published in a series of eight papers under the general title, "Social and Biological Factors in Infant Mortality" (20-27).*

Figure 1 shows their data on variations with mother's parity of postneonatal mortality (deaths between 1 month and 1 year of age) in different social classes (20). Social class differences in mortality rates are clear, as might have been expected, but equally clear is the increase in mortality with number of children in all social classes. The data depicted also support the contention that deaths due to causes associated with prenatal factors–congenital malformations–do not vary with family size or social class as do those associated with environmental factors, such as infections.

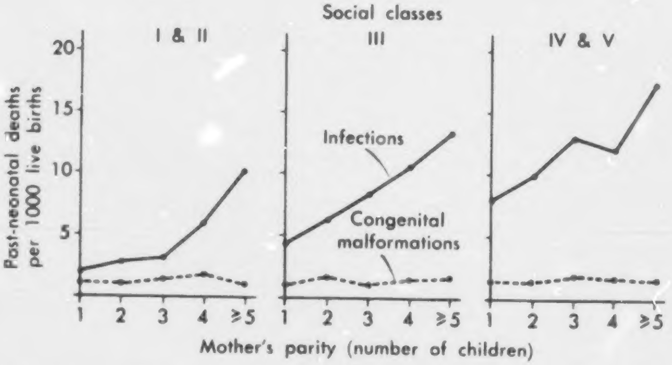

Figure 1. Variations with parity in postneonatal (1 month to 1 year) mortality from infections and congenital malformations in different social classes, England and Wales, 1949-1950, using social class scale of the British General Register Office based on occupation of father, from professionals (I) to unskilled workers (V).
Source: Morris et al. (20).

Variations with age and parity of the mother of postneonatal and second-year mortality are shown in Figure 2. The persistence of increasing mortality with increasing family size throughout the first 2 years of life is obvious and

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*The data in these papers were subsequently brought together and issued as (28).

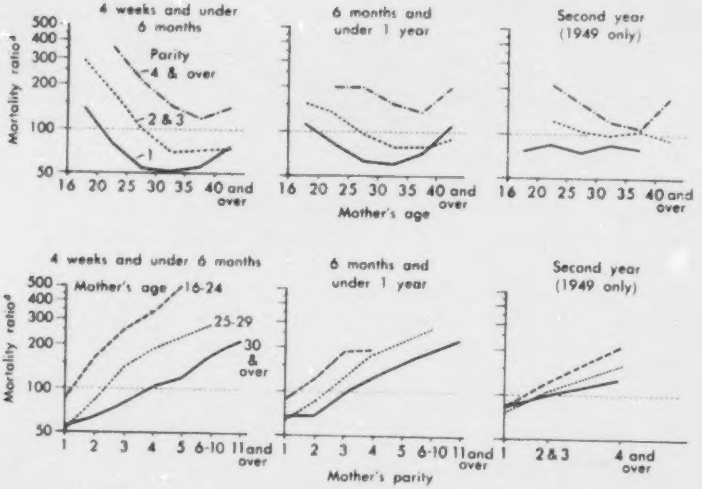

Figure 2. (Top) Variations with mother's age of mortality ratios in infants, comparing mothers of different parities. (Bottom) Variations with mother's parity of mortality ratios in infants comparing mothers of different ages. (England and Wales, 1949-1950.)

[a]Ratio between rates in a given population group and the average rate for the total population.

Sources: Heady and Morris (26), Morrison et al. (27).

appears in all maternal age groups. However, it is clearly more marked in the younger mothers (26).

Finally, they examined variations in mortality rates when each of the three factors–social class, maternal age, and family size–is controlled. When rates are compared, the findings shown in Figure 3 were obtained. Mortality ratios bring out the differences more dramatically, as is evident in Figure 4 (27). Mortality rates increase with family size in all social classes, but the effects are most powerful in the younger mothers, regardless of social class. (A young mother with a large family will, of course, have closely spaced children. Birth interval will be discussed later.) The authors comment:

> The mortality ratio (though not, of course, the actual mortality rate) for fourth and higher children is in fact higher in classes I and II than in the other classes. It is clear, therefore, that the relatively high mortality rates among infants of young mothers with large families are not a phenomenon peculiar to any one social class due to some simple poverty factor. It is also true that the higher death rates in classes IV and V cannot be explained by the concentration of young mothers with large families in these classes. (27, pp. 104-105)

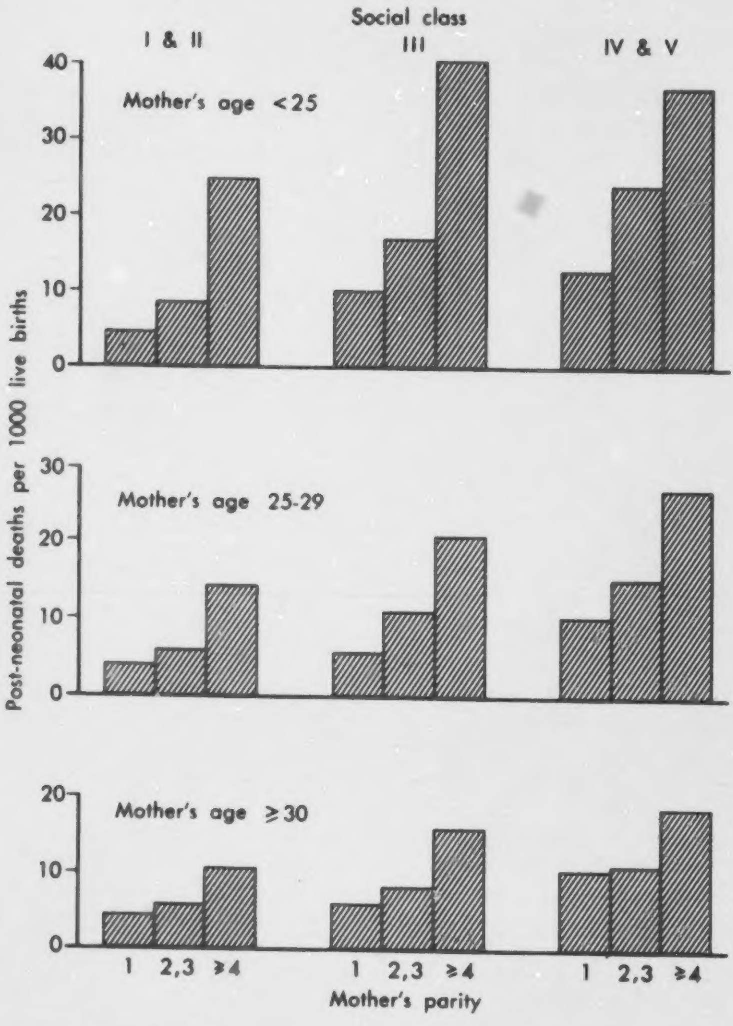

Figure 3. Variations in postneonatal mortality rates with age and parity of the mother and social class of the father, England and Wales, 1949-1950.
Source: Heady et al. (23).

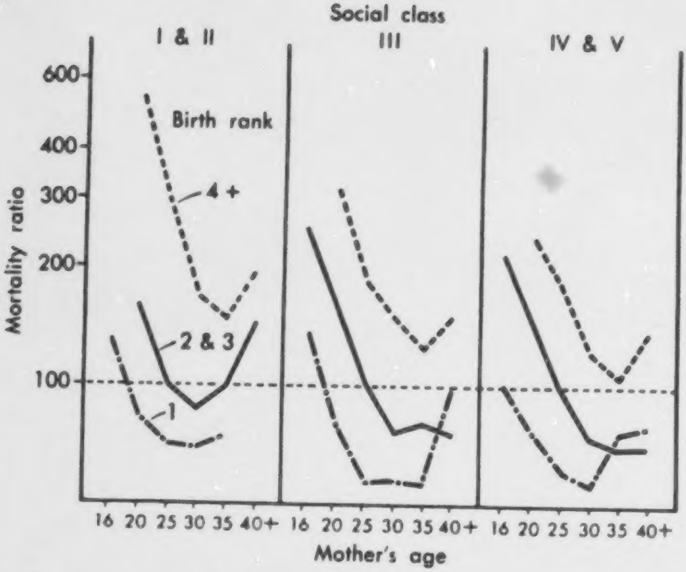

Figure 4. Variations in postneonatal mortality ratios with birth rank of infant (= mother's parity) and mother's age in different social classes, England and Wales, 1949-1950.

Source: Morrison et al. (27).

Evidence from the State of New York that is comparable in many respects to that of Morris and his associates has been provided by Chase (29, 30). She studied "nearly one-half million births" which occurred in New York State, exclusive of New York City, in the years 1950-52. The major study group consisted of single, white fetal deaths and live births. Through examination of death certificates, information was obtained for each child who died within 5 years of birth, and this was related to information from the birth certificate of the same individual. Her data concerning the postneonatal and early childhood deaths are relevant here since environmental factors may be expected to be most important after the neonatal period. The variations in mortality rates by birth rank are shown in Table 4, in which the increase associated with family size is obvious.

Analyses of her data had indicated that increasing mortality rates were associated with prematurity, maternal age, and social class. In her second paper (30) she controlled for prematurity and maternal age by examining the mortality in children whose mothers were 20 to 29 years at the time of their births and whose birth weights were between 2,501 and 3,500 grams. These

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TABLE 4

Fetal Mortality and Mortality among Children under 5 Years of Age by Infant's Birth Rank, New York State, Exclusive of New York City, 1950-1952

Infant's Birth Rank	Total Births	Fetal		Neonatal		Postneonatal		Early Childhood	
		Deaths	Rate per 1,000	Deaths	Rate per 1,000	Deaths	Rate per 1,000	Deaths	Rate per 1,000
Total	436,045	6,928	15.9	7,002	16.3	2,247	5.3	1,462	3.5
First	135,882	2,252	16.6	2,107	15.8	506	3.8	354	2.7
Second	139,881	1,581	11.3	2,075	15.0	649	4.8	433	3.2
Third	84,393	1,301	15.4	1,345	16.2	481	5.9	295	3.6
Fourth	38,993	717	18.4	682	17.8	256	6.8	177	4.7
Fifth	17,366	396	22.8	354	20.9	137	8.2	79	4.8
Sixth and higher	19,387	636	32.8	437	23.3	218	11.9	123	6.8
Not stated	143	45	(314.7)[a]	2	-	0	-	1	-

- Rates based on less than 100 individuals are not shown.

[a] Based on at least 100, but less than 1,000 individuals; rate high but number of cases low.

Source: Chase (29, Table 6.4, p. 111).

children were considered to represent a "favored" group. She then compared mortality rates within various socioeconomic groups by birth ranks. Her findings are shown in Figure 5. Increasing mortality rates with declining socioeconomic levels are apparent, but equally apparent is the association between increasing mortality and family size *within* the various socioeconomic groups, especially in the postneonatal and early childhood periods.

Similar evidence was found in the longitudinal study of pregnancies on the island of Kauai in Hawaii, reported by Yerushalmy, et al. (31). Their data were obtained during 1953 when all women on the island of Kauai who had experienced at least one pregnancy were interviewed. Their study population included 6,039 women of a total population of around 30,000 on the island. In each interview a complete reproductive history was obtained. This portion of their study was, therefore, retrospective in nature, and the hazards of the method were well known to Yerushalmy and his colleagues. They rigorously scrutinized their findings to test both reliability and adequacy. On comparing their data with that obtained from locally recorded vital statistics, with similar data from elsewhere, and with known facts concerning variations with maternal age and parity, they concluded that it was, indeed, reliable except in regard to the reporting of early fetal deaths (under 20-weeks gestation) on the part of women over 50 years of age.

The particular findings of their study which are of interest here are shown graphically in Figure 6, which shows relative mortality rates in early and late gestation and from birth through 4 years by order of pregnancy. The important point is that at *all* stages, including early and late fetal periods (before and after 20 weeks' gestation) death rates are highest with the higher order pregnancies. Furthermore, when childhood mortality rates were calculated (deaths in age group 1-4 per 1,000 children who survived to age 1), the correlation with birth order was strikingly direct–almost linear. The authors state:

> The pattern of childhood mortality at 1 to 4 years of age exhibits a very orderly and striking variation with order of pregnancies to an even stronger degree than any of the other indices. This indicates that the high rates for the high order of pregnancy may have an environmental origin. (31, p. 87)

Further evidence is offered by Newcombe and Tavendale (32), who compared certain factors relating to 13,556 handicapped children, child deaths, or stillbirths with control data obtained from the birth certificates of 213,353 infants born between 1953 and 1959 in British Columbia. They showed clearly, for example, that congenital malformations of various kinds were associated with maternal age rather than parity–an older woman is more likely to give birth to a child with a congenital malformation regardless of her parity. There were two general exceptions: (a) a statistically significant "in-

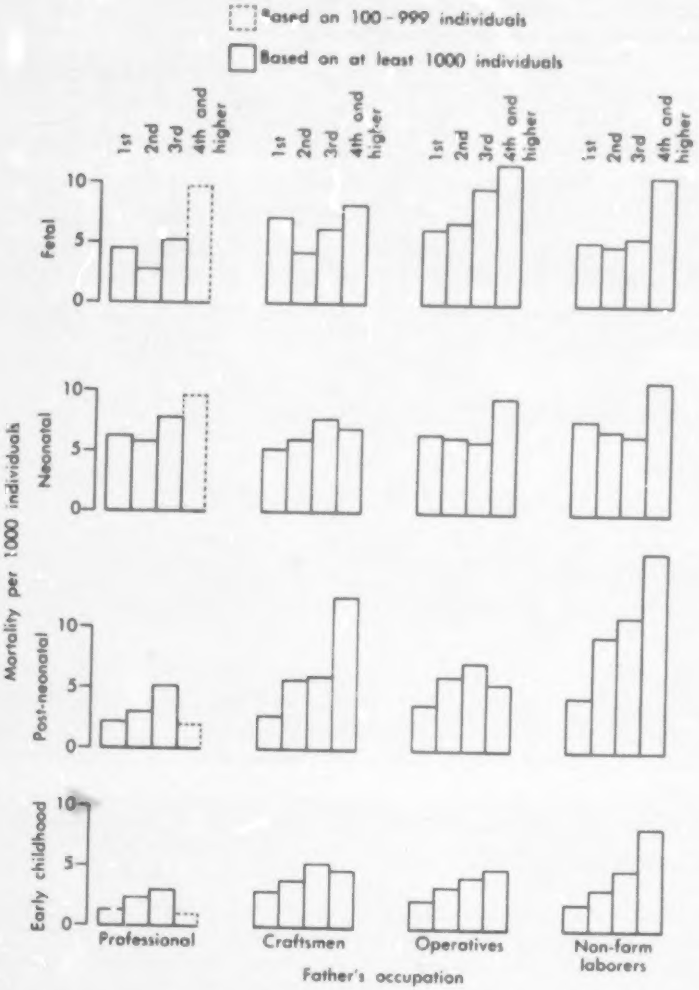

Figure 5. Variations in infant mortality with birth rank of infant and father's occupation, New York exclusive of New York City, 1949-1952.
Source: Chase (30).

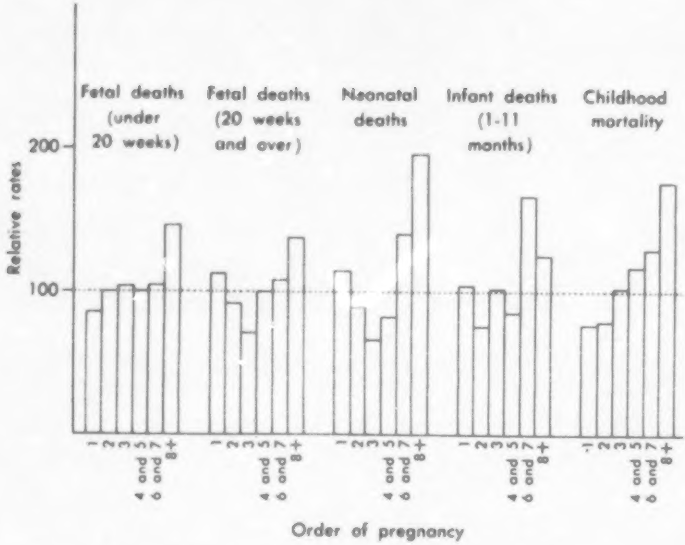

Figure 6. Variations in relative mortality rates with order of pregnancy from gestation to early childhood (relative rates = specific rate expressed as a percentage of the rate for the total—all pregnancies—in each age group), Hawaii, 1953.
Source: Yerushalmy et al. (31).

crease in risk for offspring of advanced birth order for infective and parasitic diseases"—those diseases in which environmental factors must have played an important role; (b) an increased risk associated with higher parity in the younger mothers, as was also observed by Morrison, et al. (27) and shown in Figure 4.

Family Size and Physical Growth. Much of the evidence examined so far relates to the effects of family size on very young children. Evidence of the persistence of these effects is available from several longitudinal studies of physical growth. The data show definite, sustained differences in the growth of children, associated with family size and lasting through adolescence.

In Great Britain the National Survey of Health and Development carefully followed physical growth in a long-term study of 5,386 children born during the first week of March, 1946. The sample was drawn from all parts of Great Britain and included all children born to the wives of nonmanual workers and of farm laborers and 25 percent of those born to the wives of other manual workers and the self-employed. The findings to date (and they are still being followed!) have been described in three books by Douglas and his co-workers (33, 34, 35), and in numerous articles.*

They found that differences in the growth of children associated with family size were not limited to the lower social classes and were established by age 4½ in both sexes (33). Douglas and Simpson have reported the findings at ages 7, 11, and 15 in 1,456 girls and 1,557 boys from their original sample (36). As is apparent in Table 5, differences associated with social class were found at all ages. An association between height and family size was not apparent in the upper middle class (professional, salaried, or self-employed men with wives from similar backgrounds) but became increasingly apparent with each descent on the social class scale, reaching its maximum in the manual classes. It is noteworthy, however, that only children of both sexes, in all social classes, and at all ages appear to grow equally well.

TABLE 5

Unadjusted Average (Mean) Heights (in Inches) of Boys and Girls, by Social Class and Number of Sibs, Great Britain, 1953-1961

	Boys				Girls			
	Number of Sibs				Number of Sibs			
Socioeconomic Class	0	1	2	3 or More	0	1	2	3 or More
				AT 7 YEARS				
Upper middle	47.17	48.23	47.72	48.65	47.71	48.12	47.79	47.13
Lower middle	47.82	47.62	47.51	47.41	48.03	47.67	47.14	46.57
Upper manual	47.93	47.59	47.15	46.79	48.35	46.95	46.94	46.14
Lower manual	48.15	47.20	47.07	46.29	47.61	46.89	46.48	45.99
				AT 11 YEARS				
Upper middle	55.13	56.40	55.75	56.65	55.86	56.59	56.13	55.78
Lower middle	55.98	55.94	55.36	55.26	57.07	56.28	55.62	55.04
Upper manual	55.70	55.43	55.27	54.54	56.72	55.45	55.78	54.14
Lower manual	57.15	55.34	54.88	54.48	56.03	55.14	54.76	54.14
				AT 15 YEARS				
Upper middle	63.43	64.77	63.59	65.03	62.82	63.43	63.10	62.78
Lower middle	64.73	64.26	63.95	63.44	62.85	63.34	62.63	62.23
Upper manual	64.40	63.52	63.56	62.75	62.84	61.90	62.61	61.78
Lower manual	64.53	63.64	63.48	62.56	62.23	62.33	62.02	61.57

Source: Douglas and Simpson (36).

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*See bibliography in (35).

In another British study, Grant (37) followed the growth of 1,310 children living in a London County Council housing estate, most of whom were measured at or near their sixth, tenth, twelfth, and fourteenth birthdays. Her findings parallel those reviewed above, but she also used her data to clarify several points. Taking advantage of the longitudinal nature of her material she showed that the differences in average (mean) measurements (at various ages) associated with family size are, in fact, the product of continuing slower rates of growth in children from larger families. The mean increments over a period of time, for example, between the sixth and tenth birthdays are shown in Table 6, are less in the children from larger families.

TABLE 6

Gain in Height between Sixth and Tenth Birthdays, by Family Size, London, 1953-1960

Number of Children in Family	Height Gain between Sixth and Tenth Birthdays (cm.)	
	Boys	Girls
1	23.3	23.6
2	23.0	23.4
3	22.9	23.3
4	22.4	22.1
5 or more	22.1	22.6

Source: Grant (37).

She also examined the interaction between family size and birth rank and produced some thought-provoking results. One example is shown in Figure 7 which was constructed from her data. The figure shows only heights in boys, but the same trends are evident in her data for height and weight in both sexes. In order to examine this phenomenon further, she assigned a plus or minus "developmental level" (DL) based on the difference in centimeters between the measured height of a child and the expected average height for his age, using London data for comparison. The DL was assigned on the basis of heights obtained at or near age 8, to avoid growth variations produced by pubertal growth, and it allowed her to compare both boys and girls. She then compared the first and second child in consecutive pairs of children in families of different sizes and obtained the data shown in Table 7. As she noted, "the later-born child of any consecutive pair within a family tended to be taller than the preceding one." In her discussion, she noted:

> . . . that the smaller size of children in larger families is common to all of them and that the first-born does not achieve the height and weight of

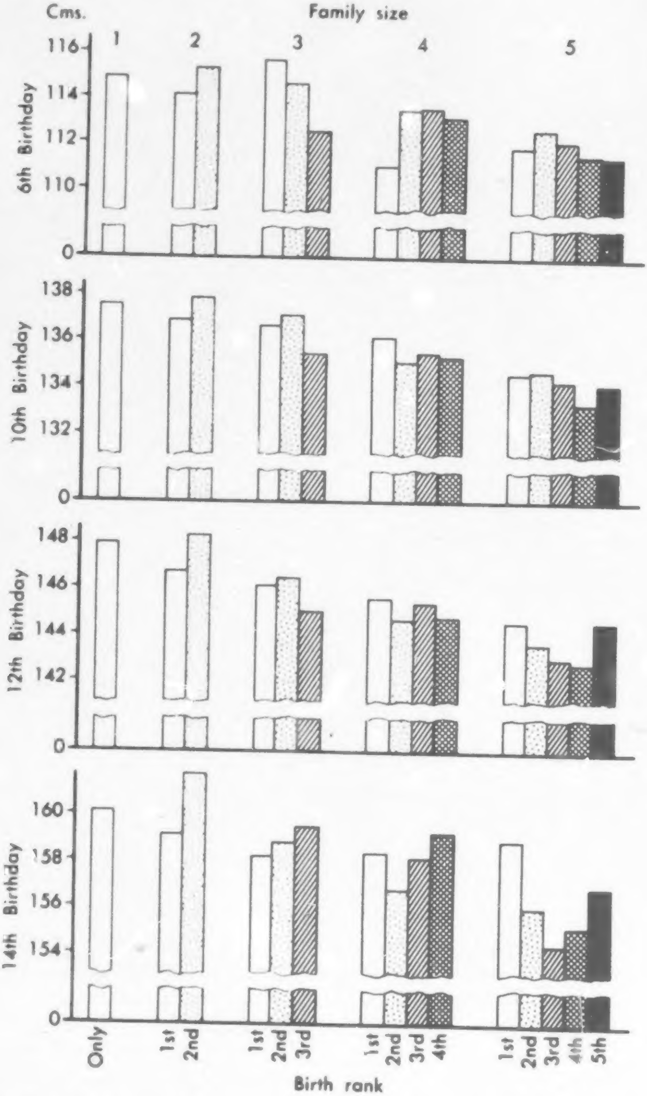

Figure 7. Variations with family size and birth rank in achieved height at various ages in boys followed from age 6 to 14.
Source: Grant (37).

TABLE 7

Developmental Levels, at the Same Age, of Consecutive Children in Families of Different Size, London, 1953-1960

Number of Children in Family	Birth Ranks	Number of Pairs	Developmental Level[a]	Difference
2	1st and 2nd	103	1st + 1.61	
			2nd + 2.98	+1.37
3	1st and 2nd	106	1st + 0.89	
			2nd + 1.35	+0.46
	2nd and 3rd	79	2nd + 0.06	
			3rd + 2.26	+2.20
4	1st and 2nd	55	1st + 0.20	
			2nd + 0.56	+0.36
	2nd and 3rd	63	2nd - 0.32	
			3rd + 0.46	+0.78
	3rd and 4th	49	3rd + 0.59	
			4th + 0.53	+0.06
5 or more	1st and 2nd	44	1st - 0.32	
			2nd - 0.18	+0.14
	2nd and 3rd	49	2nd + 0.10	
			3rd + 0.51	+0.41
	3rd and 4th	40	3rd - 0.22	
			4th + 0.55	+0.77
	4th and 5th[b]	33	4th + 0.06	
			5th - 0.27	-0.33

[a] Difference in centimeters between the height of a child and average height for age, at or near age 8.

[b] The fifth child in eighteen of these families was not the last but had younger sibs following on.

Source: Grant (37, p. 38).

> first-borns who remained only children . . . [the findings] suggest that the advent of each additional child to a family acts as a check on the growth of all preceding sibs. . . . (37, p. 38)

Sexual maturation, another aspect of growth and development, is also associated with family size. Tanner, in discussing the phenomena associated with earlier maturation in man (38), the secular (or long-term) trend, has noted:

> The one thing that all authors find significantly related to age at menarche is the number of children in the family. The larger the number

> the later the menarche and the less the height and weight at all ages, both of the earlier and later born children. . . . (38, p. 27)

He mentions that this has been documented in Czechoslovakia and England and cites malnutrition or increased frequency of diseases, either of which might be associated with increased family size, as possible causal factors.

Douglas and his colleagues also looked into this in the National Survey of Health and Development mentioned earlier. In the first report of their observations (34), only the findings in girls were evaluated because they used menarche as their definitive sign of maturation and lacked an equally satisfactory criterion for boys. Noting the secular trend toward earlier menarche, which has been attributed at least in part to improved nutrition (38, 39, 40), Douglas found no social class differences, in spite of the considerable differences he had observed in growth.

> A more detailed study of these families fails to show any positive association between poor living conditions and late puberty; in the middle classes it is the late developers who tend to come from the better homes, from those which were least crowded and best equipped. . . . (34, p. 108)

He did, however, find clear differences associated with family size, as shown in Table 8, in which an obvious relation between family size and menarche is apparent, and only girls may be seen to mature at substantially earlier ages. In a more recent follow-up of these same children, Douglas has

TABLE 8

Age of Puberty among a Sample of Girls in the National Survey of Health and Development by Completed Family Size, Great Britain, 1954-1957

Completed Family Size (Number of Children)	Age at First Period				
	Early[a] (Percent)	Average[b] (Percent)	Late[c] (Percent)	Total (Percent)	Number of Girls
1	53.0	28.3	18.7	100.0	219
2	39.2	36.1	24.7	100.0	502
3	36.0	33.6	30.4	100.0	342
4 or more	33.5	31.9	34.6	100.0	364

[a] Before 12 years 10 months.
[b] 12 years 10 months-13 years 9 months.
[c] After 13 years 10 months.

Source: Douglas (34).

reported similar findings in boys, based on a standardized assessment of maturation by physicians who examined the boys at age 15 (35).

Family Size and Intelligence. We have seen that several health indicators reflect the effects of family size. Another important indicator, although perhaps of well-being rather than health per se, is intelligence. Intelligence has been extensively studied in relation to family size, and the existence of a striking negative correlation between the two has been known for many years.

Anastasi reviewed the literature carefully a decade ago (41); Hunt has discussed it thoughtfully more recently (42). Studies of large populations have shown repeatedly that children from large families score significantly lower in intelligence tests. For example, the results of a group intelligence test administered to most of the 11-year-olds in Scotland in 1932 and in 1947 were analyzed by the Scottish Council for Research in Education. In 1932 the sample numbered 87,498, and in 1947 it was 70,805. This represented 87 and 88 percent of the total populations, respectively. In both studies, a negative correlation was found between the test scores and size of sibship (number of children in a family). This negative correlation held true in all social classes, even though the children's scores reflected social class differences. A random sample of 1,215 of the children tested in 1947 were given the Stanford Binet intelligence test; again the negative correlation with sibship was found.[*] The average I.Q. of only children was 113; that of children with five siblings or more was 91.

A second large-scale study reviewed by Anastasi was carried out in France during 1943-44, when 2 percent of the total elementary school population of France, age 6 to 12, was tested (41). The findings were almost identical: mean test scores decreased with increase in family size. Only children were found to have an average mental age 1 to 2 years higher than children with eight siblings or more, and the differential was apparent in each age group tested. Finally, this study showed the expected social class differences in scores, but the negative correlation between intelligence and family size varied among the classes. It was "clearly apparent" in children of farmers, manual laborers, and clerical workers, "negligible" in children from the managerial class, and "barely discernible" among those from the professional class.

Anastasi also cites numerous other studies of normal children carried out in England, the United States, Greece, and Germany in which it was found that mean intelligence test scores declined with increase in family size. In addition, she notes that Terman, in his study of gifted children, found a negative correlation[†] between I.Q. and number of children in a family (41).

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[*] In this case the correlation coefficient was –.32.

[†] $r = -.27$.

As impressive as the correlation data are the test results themselves. Figures from the British National Survey of Health and Development have been published by Douglas (35). The performance of the children studied on the Junior Leaving, or 11-plus, Examination is shown in Table 9, together with their test results at 8 years of age. The expected social class differences in performance are already evident in the younger children, but equally evident at both ages and in all social classes are marked differences associated with family size. It should be noted further that whereas the effects of family size on growth were ameliorated by social class in this same population (see Table 5), such was not the case with intelligence test performance.

Another study has shown the persistence of these differences into adulthood. Vernon (43) analyzed the data from about 10,000 British male National Service Recruits and examined the relation between number of

TABLE 9

Average Intelligence Test Scores[a] by Completed Family Size and Social Class, Great Britain 1954-1957

Social Class	Age at Test	Completed Family Size							
		1	2	3	4	5	6	7 or More	Unknown
Upper middle	11	59.87	57.31	55.80	56.49	55.65	54.45	54.00	55.00
	8	59.20	56.82	55.44	56.79	54.60	52.14	54.33	63.50
Lower middle	11	54.60	55.27	53.20	52.02	51.81	50.11	47.81	59.00
	8	53.88	54.26	52.64	50.20	50.03	51.43	47.95	58.00
Upper manual working	11	52.74	52.19	49.90	48.61	47.40	45.80	40.54	47.50
	8	52.27	51.64	49.93	48.65	47.31	48.53	42.49	44.00
Lower manual working	11	50.93	48.71	48.16	46.64	45.78	44.86	42.19	44.73
	8	51.54	49.64	48.38	47.44	45.27	45.51	42.44	45.09
All social classes	11	52.96	52.16	50.41	48.57	47.51	46.04	42.49	47.17
	8	52.86	52.09	50.36	48.74	46.87	47.07	43.06	47.00
Social class held constant	11	52.87	51.63	50.27	49.06	48.26	46.97	43.98	49.31
	8	52.83	51.69	50.23	49.07	47.53	48.03	44.61	49.14

[a] These are "T scores which were designed so that the average score for all children in the population is fifty and the standard deviation 10. . . . To convert T scores into I.Q.'s the following formula may be used:

I.Q. = 25 + 1.5 (T score)." (34, pp. 34-35)

Source: Douglas (35).

siblings and performance on six mental tests. For purposes of analysis, he considered "four main factors or underlying types of ability: general, verbal-educational, spatial-mechanical, and physical." His findings, which he compared with those of the Scottish Mental Survey, are shown in Table 10.

TABLE 10

Mean Standard Scores of Recruits on Mental Tests of Different Types, by Number of Siblings, Great Britain, 1946

Number of Siblings	Frequency (Percent)	General	Verbal-Educational	Spatial-Mechanical	Physical	Scottish Mental Survey
None	13.3	106.6	107.2	104.6	102.3	105.8
1	22.0	105.8	105.8	104.3	101.6	105.1
2	18.6	101.8	101.7	101.7	100.8	101.6
3	13.8	98.8	98.5	99.5	99.8	98.6
4	10.4	94.9	94.7	96.7	98.7	95.8
5	7.8	93.2	92.9	95.2	97.7	94.2
6	5.2	92.4	92.6	93.5	96.4	92.8
7-8	5.5	88.9	91.6	92.9	96.5	91.8
9-11	2.8	87.9	88.2	90.6	96.2	90.1
12-17	0.4	87.2	86.2	91.6	95.8	86.5

Source: Vernon (43).

Equally clear data are available from the United States. In their extensive study of mental retardation in Minnesota covering the period 1910-1960, Reed and Reed (44) reported on the findings of a subsample of 1,016 families in which I.Q.'s were available for both parents and at least one child–a total of 2,032 parents and 2,039 children. They describe this population with care and, among other points, note that:

> . . . the sub-sample seemed to be identical with the expectations for an intelligence curve of a normal population in Minnesota. . . . The striking differences to be presented are certainly not due to testing errors. (44, p. 64)

Their findings for this population are shown in Table 11; the figures require no comment. The figures from their study, as well as those from the Scottish survey and the scores from Vernon's "general" test (43), are shown graphically in Figure 8.

Interesting insight is provided by Scott (45), who in 1959 and 1960 studied over 4,000 London school children aged 10 to 11. Boys and girls were represented about equally, and they were "a cross-section of children attending ordinary day schools in London." Heights and weights, as well as informa-

TABLE 11

Mean I.Q. of Children, by Family Size,
Minnesota, U.S.A., 1910-1960

Family Size	Number of Families	Number of Children Tested	Mean I.Q. of Children
1	141	141	106.37 ± 1.39
2	370	583	109.56 ± 0.53
3	287	606	106.75 ± 0.58
4	122	320	108.95 ± 0.73
5	57	191	105.72 ± 1.15
6	21	82	99.16 ± 2.17
7	7	39	93.00 ± 3.34
8	4	25	83.80 ± 4.13
9	5	37	89.89 ± 2.94
10	2	15	62.00 ± 7.55

Source: Reed and Reed, (44).

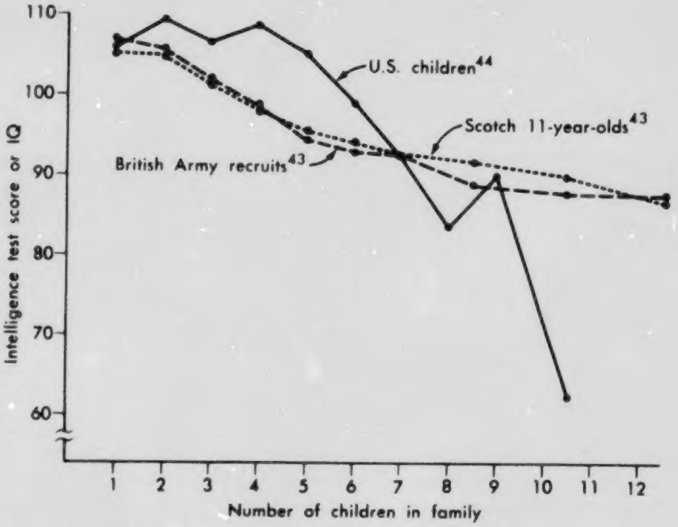

Figure 8. Variations of I.Q. or intelligence test scores with number of children in England, Scotland, and the United States.
Source: Vernon (43), Reed and Reed (44).

tion on family size, were obtained in a survey, and the data were then analyzed with the scores of verbal reasoning tests administered by the schools (the Junior Leaving, or 11-plus, Examination). Scott's findings agreed with those obtained elsewhere: both intelligence test scores and growth decreased as family size increased. In addition, he presents the data shown in Table 12, which shows "a tendency for intelligence both to increase with height and to lessen as family size increases."

Scott concluded that his findings showed:

> (a) Height, weight and verbal reasoning scores all tend to decrease as family size increases.
> (b) Independently of family size, height and verbal reasoning scores tend to rise and fall in sympathy.
> (c) Family size is more closely associated with verbal reasoning than with height. (45, p. 169)

TABLE 12

Average Verbal Reasoning, Standardized Scores
(11+ Examination) by Height and
Family Size, England, 1949

	Number of Children in Family			
	1	2	3	4 and More
Height (cm.)	Average Value Reasoning Scores[a]			
Less than 130.0	96.2 (19)	101.2 (35)	97.5 (16)	94.5 (33)
130.0-134.9	102.1 (58)	100.4 (88)	101.4 (52)	94.1 (55)
135.0-139.9	108.4 (70)	107.0 (119)	102.4 (80)	100.7 (44)
140.0-144.9	108.5 (54)	106.0 (104)	109.5 (37)	99.9 (44)
145 and over	108.5 (43)	107.5 (50)	106.5 (28)	102.8 (16)

[a] Figures in parentheses are the number of children in each class.

Source: Scott (45).

The data in Table 12 also suggest that even if the constellation of causal factors interacting in a large family is such that the children grow well, they are still likely to suffer in their intellectural development. The data seen in Tables 5 and 9 from the British National Survey of Health and Development (35, 36) support this concept, although from a different angle. In the upper-middle families of that study the negative correlation between family size and growth eventually disappeared, but the negative correlation between family size and intelligence remained. These families apparently can and do compensate for increased family size sufficiently to support the growth of their children, regardless of their number. This does not occur with those factors responsible for intelligence. The factors operating to impede intellectual development in children from large families, whatever they may be, are not compensated for even in upper-middle families.

In his 1966 Galton Lecture, Tanner (46) reviewed the evidence gathered to date of the association between height and intelligence, and between those two attributes and family size. He raises an interesting point with regard to findings concerning family size:

> To summarize then: according to present data, children with many sibs in the house are retarded in their height growth from an early age compared with children of the same social class with few sibs. This is especially true of children in poorly-off families. They also score lower in tests of intelligence or attainment. By the time adulthood is reached they have not caught up in intelligence tests, but this may be the result only of the vicious circle in educational opportunity described above. . . . (46, p. 130)

The "vicious circle" mentioned by Tanner is worth describing for those inclined to wonder whether the actual differences in the I.Q.'s found in children of different family sizes are in fact of any real consequence. Tanner noted that a 9-point difference in I.Q. amounts to "two thirds of the standard deviation of the test score, and in the 11+ exam, for instance, corresponds to a difference of about 15 percentile ranks at the level usually used for pass or fail." Later on he notes that children who have that advantage in the 11+ exam "obtain an increasing educational advantage thereafter, simply as a result of passing these tests. Hence they would remain always ahead, an example of the classical self-fulfilling prophecy or positive feedback." The power of the "self-fulfilling prophecy" has been recently documented by Rosenthal and Jacobson (47), who showed convincingly that teacher expectations based on the *reported* test performance (the teachers were shown no actual results) of children have a marked effect on the performance of the children in the classroom situation.

The Effects on Parents

Children are more susceptible to environmental influences and the effects of these influences are more easily measured. Nevertheless, there is some evidence that family size takes its toll of parents, too.

Family Size and Parental Health. Chen and Cobb (27) cited three pertinent studies. One ". . . has shown a direct linear relationship between the frequency of peptic ulcer and number of children for a group of employed men." A study of women showed ". . . a positive association between rheumatoid arthritis and large numbers of children." A study of blood pressures, interestingly enough, has shown no such relationship: ". . . blood pressures are higher among the childless, be they men or women, and . . . in general the greater the number of children the lower the pressure. Furthermore, in a four year interval . . . men and women who added to their families had on the average smaller rises in pressure than those who did not."

Hare and Shaw (48) studied fifty-five British families divided according to the number of children under 16 years of age. They found that both physical and mental ill health in parents increased with family size, and more markedly so in mothers than in fathers. Interestingly, they reported that overall incidence of illness in the children did not increase with family size, but they attributed this to the fact that the mothers of larger families were too busy to take their mildly ill children to their physicians or seek other attention; hence, recorded illnesses in these children were low.

Family Size and Maternal Health. A study of sociocultural factors in the epidemiology of hypertension among the Zulu of South Africa has been reported by Scotch (49). His study, carried out in 1959, included Zulu men and women in two communities, one a rural native reserve and the other an urban "location" near Durban. He found that hypertension was more common in the "location," that women were more affected than men, and that the prevalence increased with age. Among the variables examined was the number of children. In the Zulu women from the "location," the incidence of hypertension increased with the number of children. The difference found in women with five or more children compared with those with four or less was statistically significant.* He did not find this difference among women living in the rural area, and he commented as follows:

> . . . In the city, women with many children had a higher prevalence of hypertension than those with few children, whereas in the rural area there was no relationship between number of children and hypertension. . . . In traditional Zulu society a woman's status is clearly related to her ability to bear children . . . a greater number of children would in no way be stressful. . . . The opposite holds true in the city, where a large number of children must be seen as stressful. . . . As long as a woman has a minimum number her status as a wife is secure. But should she have too many children, life becomes difficult in many ways. . . . (49, p. 1210)

Comparable findings have been reported by Murphy (50), who studied the effects of cultural change on the mental health of Yoruba women in Nigeria. She expected to find evidence of "acculturative stress" among Yoruba women who had been "western educated" in comparison with those who were "unacculturated." Measurement of mental health was "based on systematic questions asked of the women based on psychophysiological sensations and psychiatric experiences, and on data regarding each subject's social adjustment given by a knowledgeable informant." The findings did not reveal any significant difference between the mental health of "acculturated" versus "unacculturated" women, but they did show the following correlation between mental health and numbers of children:

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*At the 0.05 level.

> The barren women from both groups have the poorest mental health; the points of optimally good mental health coincide with the women who have 2, 3 or 4 children, and there is again poor mental health in both groups among women with 6 or more children. (50, p. 8)

Finally, from England there are some intriguing data from Pyke's study of the relationship between parity and the incidence of diabetes in women, most of whom were over 45 at the time of onset (51). In a comparison of the number of women in each parity group among the diabetics with that of a control population, the increase in diabetes with increasing parity of the women was dramatic and highly significant statistically, as suggested by Figure 9.

The effects of increasing numbers of pregnancies on mothers must also be mentioned here. A large number of pregnancies is a necessary precondition for a large number of children, although it is obvious that where infant or childhood mortality rates are high, a mother may belong in the "grand multipara" group and yet have only a few living children. Repeated pregnancies followed by prolonged lactation periods will, among other things, produce sustained needs for high quality protein in the diet. In the many parts of the world where these needs are poorly met, the result is what Jelliffe has termed the "maternal depletion syndrome" (14). This process may contribute to low birth weight of their infants, to poor performance in lactation and, ultimately, ". . . this cumulative process plays a part in the premature ageing and early death often seen among women in developing regions."

Direct evidence concerning this condition is scant, although most clinicians who have worked in such countries would certainly agree with Jelliffe. Indirect evidence, however, is available. Wright (52), for example, studied maternal mortality figures for Ceylon during 1962-63 by maternal age group. He found that in age groups 35 to 39, 40 to 44, and 45 to 49 the risk of maternal mortality exceeded the overall average maternal mortality risk by factors of 1.5, 2.0, and 3.3 respectively. Advancing age per se is undoubtedly operating here, but in a country like Ceylon advancing age and advancing parity are closely connected, and Eastman and Hellman (53) have stated that the effects of these two factors on increasing maternal risk are additive—each increases the risk independently.

Perkin (54) has examined similar data from Thailand that tends to confirm the findings from Ceylon. Among other things, he reported that in 1963

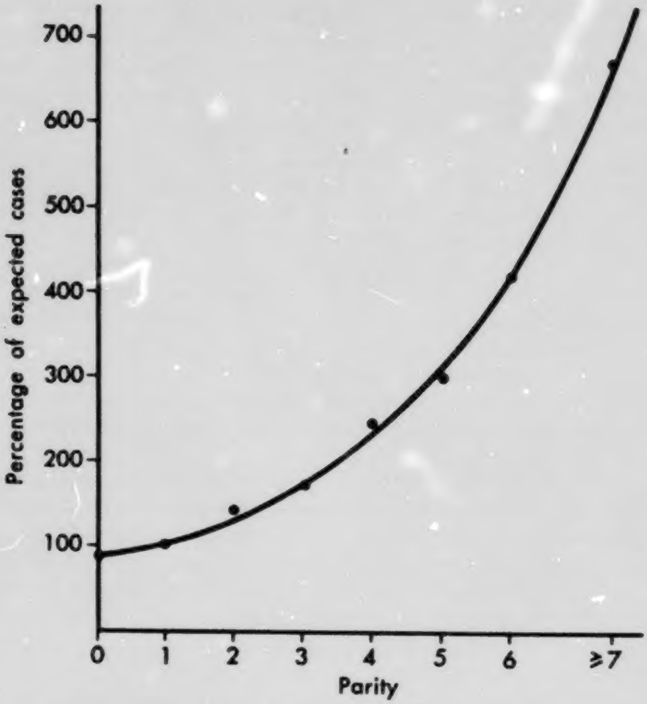

Figure 9. Variation with parity in the incidence of diabetes beginning in women over 45 years of age, England, 1956.
Source: Pyke (59).

women over age 35 contributed 22 percent of the births,* but that 38 percent of all maternal deaths occurred in this age group. Not only does mortality increase but obstetrical complications also increase with maternal age, as is shown by his data in Table 13. Unfortunately, it is impossible here to sort out the effects of age versus those of parity. That high parity is at least present in the older women may be deduced from the fact that the number of live births reported by women in various age groups continues to rise in an almost linear fashion among Thai women over 35 years of age, as shown in Figure 10. Furthermore, we have been able to show from our own data (15, 56) the relatively high proportion of deliveries of a higher order of parity. In

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*In the United States in 1965 women over 35 contributed less than 12 percent of all births (55).

TABLE 13

Complicated Deliveries[a] by Age of Mother, Women's Hospital, Bangkok, Thailand, 1964

Maternal Age	Deliveries	Complicated Deliveries Number	Complicated Deliveries Percent
15-19	1,521	203	13.3
20-24	6,193	693	11.2
25-29	5,956	832	14.0
30-34	2,835	445	15.7
35-39	1,294	257	19.9
40-44	444	104	12.4
45-49	47	10	21.3
	18,291	2,544	13.9

[a] Includes placenta previa, antepartum hemorrhage, postpartum dystocia, abnormal presentation, fetal distress, toxemia.

Source: Perkin (54).

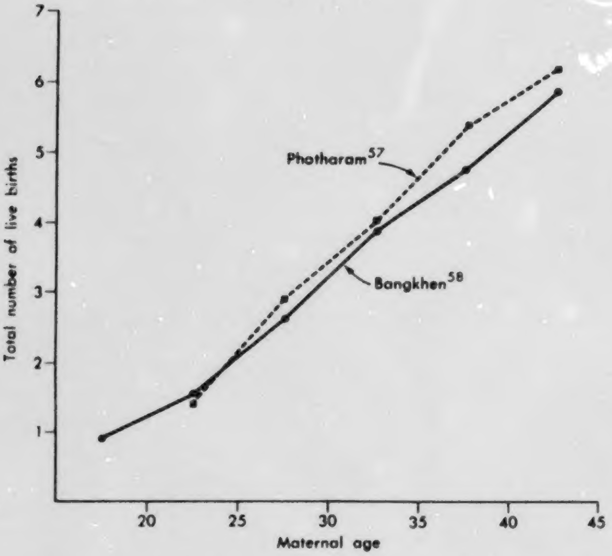

Figure 10. Variations in total number of live births with maternal age in Thai women showing continuing fertility beyond age 35.

Sources: Hawley and Prachuabmok (57), Cowgill *et al.* (58).

two rural communities not far from Bangkok, 385 women aged 35 to 44 years reported a total of 1,121 previous live births; 447 (39.9 percent) were of birth rank five or higher.

This does not settle the matter, of course; what is needed are studies in which both maternal age and parity are properly controlled. In the meantime, Perkin's contention (54) that older, high parity women constitute a "high risk" group seems reasonable. Knowledge, Attitude, and Practice (K.A.P.) surveys (15, 58) have shown that 85 percent of Thai women over 35 years of age, regardless of parity or number of living children, state that they want *no more* children. If these women could achieve that desire, one might expect to eliminate around a third of the maternal deaths.

THE EVIDENCE CONCERNING HEALTH CONSEQUENCES OF BIRTH INTERVAL

Although the total number of children occurring in a family is the most important determinant of population pressure within that family, the interval between births is a factor which must not be ignored. Obviously, in the absence of effective family planning, the mother who has children at frequent intervals is likely to have more of them. Equally obvious is the fact that the more young children there are in a household, the greater the demands upon the mother's energy and skills in providing adequate care for them.

Interestingly enough, data relating infant mortality to birth interval have been available for decades. In 1923 Huse published a study carried out in Gary, Indiana, of 1,135 births, excluding first births (59). She found an infant mortality rate of 169.1 (per 1,000 live births) when the interval since the preceding child was less than 15 months, and the rate was 102.8 if the interval was greater than 24 months.

Not long thereafter in 1925 Woodbury published the results of an investigation of some causal factors of infant mortality and included a study of the association between birth interval and infant mortality among 8,196 births* occurring in Baltimore, Maryland (60). He found the following variations:

Birth interval	*1 Year*	*2 Years*	*3 Years*	*4 Years*
Neonatal (up to 28 days) mortality rates	51.2	37.3	36.7	38.1
Infant mortality (up to 1 year) rates	146.7	98.6	86.5	84.9

Eastman, in discussing the effect of birth intervals 20 years later (62), quoted Woodbury's conclusions:

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*Yerushalmy (61) reports this figure as 7,882, but quotes the same mortality figures as Eastman. I have not personally been able to obtain Woodbury's original monograph.

> . . . the infants born after short intervals had a markedly high rate of mortality from all causes. Evidently some factor that is intimately connected with the short interval–perhaps through the influence of frequent births upon the mother's health–affected adversely the chances of life of the infants who followed closely after preceding births. (62, p. 445)

Eastman then went on to say:

> Dr. Woodbury's monograph is a reserved and scholarly study, largely objective in character; and it contains no suggestion whatsoever as to what might be done to reduce infant mortality in the short interval groups. But those interested in the furtherance of birth control were quick to see a remedy. Certainly, they reasoned, if conception could be prevented in women during the first year or two after childbirth, the high mortality associated with the short interval could be prevented. And forthwith the Woodbury study became one of the cornerstones of the birth control movement and has remained so ever since. Upon it, indeed, is based the entire rationale, from a medical viewpoint, of so-called "child-spacing," a term which has come to be a sort of euphemism for contraception in general. . . . (62, p. 446)

Dr. Eastman's somewhat disparaging tone was prompted by the fact that his own study, which he was reporting at the time, had failed to reveal a similar association. His study will be discussed later, but students of the history of changes in attitude toward family planning on the part of the medical profession would be rewarded by reviewing the recorded comments in the discussion which followed the presentation of his report in Chicago in 1943.

Since the studies of Huse, Woodbury, and Eastman, there have been a number of further investigations of the effects of birth interval. They are as varied as the studies of family size, although fewer in number, and several of the studies previously referred to examined both variables in analyzing their data. Much of the work has been concentrated upon the fetal, perinatal (around the time of birth), infant, and early childhood mortality; there is surprisingly little data concerning the effects on the mother herself, although one might reasonably expect the "maternal depletion syndrome" mentioned earlier (14) to be aggravated by repeated short intervals as much or more than by excessive numbers of pregnancies.

In the following pages, more recent studies about the effects of birth interval will be discussed.

The Effects on Children

Birth Interval and Mortality. The association between birth interval and mortality from gestation through early childhood was examined in the retrospective study on the island of Kauai by Yerushalmy and his colleagues (31). Their methods were summarized earlier, but one detail is of special interest here. Yerushalmy, in an earlier report (61), had described the effects of prematurity on the association between birth interval and mortality. He gave Eastman (62) credit for pointing out that if a full-term infant is to be born within a year after the termination of a previous pregnancy, conception would have to occur within 3 months of that termination, whereas aborted fetuses or prematurely born infants, conceived 4 months or more after the previous delivery, could still be born within a year of the previous delivery. The high rates of mortality associated with prematurity would therefore artificially inflate the mortality rates of the 1-year-or-less birth interval group.

For this reason, they based their analysis of the Kauai data on pregnancy interval rather than birth interval. In addition, they calculated the relative mortality rates for the various fetal and child age groups in each pregnancy interval in order to bring out the differences more clearly. Their findings are shown in Figure 11, where it is clear that for all child age groups, death rates are highest in the shortest interval groups. For fetal and neonatal deaths, when biological factors are most important, rates are highest in the shortest interval group. They decrease to a minimum with an interval of around 2 years, then increase as the interval increases further, though never equaling the rates in the shortest interval. For postneonatal and early childhood mortality, when environmental factors would be most important, the association is consistent and almost linear: as intervals increase, chances of survival increase.

Yerushalmy had already examined the effect of birth interval on stillbirths (61). He studied all the births and stillbirths that occurred in the United States during the 5-year period 1937-1941. These were classified according to age of mother and parity, and the sample included 7,151,631 births, of which 211,079 were stillbirths. He analyzed the data on the basis of the assumption that, in general, for women in the same age group, the interval between births decreases with increasing parity, and thus provides, as he termed it, an indirect method of studying birth interval. While all of his data need not be reviewed in detail, it is pertinent here to mention two of his observations. First, he noted that when the stillbirth rates were tabulated according to age and parity, the minimum ("best") rates appear in increasingly older age groups as parity increases—as the probable interval between births increased, the stillbirth rates declined. Second, he observed

> It is remarkable that although the level of the stillbirth rate is higher for nonwhite than for total births, and although the effect of the birth-order factor and the effect of the age-of-mother factor by themselves are less pronounced among nonwhite than among total births, the percentage increase or decrease in the stillbirth rate which may be attributed to the factor of interval between births varies in a strikingly similar fashion for nonwhite as for total births.

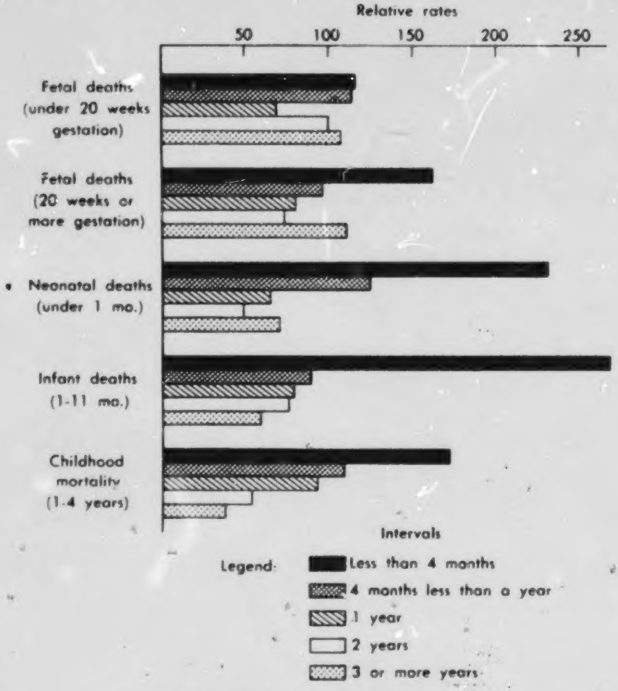

Figure 11. Variations in relative mortality rates (see Figure 6) with the interval between the termination of one pregnancy and the beginning of the next from gestation through early childhood, Hawaii, 1953.
Source: Yerushalmy et al. (31).

Eastman's study (62), mentioned earlier, was also retrospective and was based on 5,158 consecutive births (excluding births to primiparas and also "well-attested criminal abortions") delivered at the Johns Hopkins Hospital between late 1936 and mid-1943. He analyzed his data according to interval since the preceding birth: very brief, less than 12 months; brief, 13 to 24 months; moderate, 25 to 48 months; long, more than 48 months. Abortions, stillbirths, premature delivery, and neonatal deaths were all appreciably higher in the very brief interval group. In all other interval groups these rates were much lower and similar to each other.

Eastman noted that if a previous delivery were followed by a conception that ended in abortion or premature delivery, both deliveries were more likely to take place within a year. His "very brief" was, in other words, artifically exaggerated; so he attributed the differences he had observed to this factor. Because the differences among the other interval groups were minimal, he concluded that birth interval was not a significant factor. Yerushalmy, in discussing this (61), called attention to the time factor affecting prematurity in the brief interval group, as well as possible biases associated with admission policies which might affect a series of patients from only one hospital. He concluded that Eastman's findings did not necessarily contradict those of other investigators.

In the cross-sectional study of all births in England and Wales mentioned earlier, the effect of birth interval was also examined, in this case by another indirect method (27). Having data available concerning duration of marriage, the investigators assumed that the birth interval would be brief in the case of mothers giving birth to a second child after less than 2 years of marriage, or a third after less than 3 years. They therefore considered such births "closely spaced" and compared the mortality rates in that group with the rates in all other births. Their results are shown in Figure 12, where it may be seen that in all maternal age groups and in all social classes the postneonatal mortality rates are higher in the closely spaced group than in the other groups. These rates are also higher in younger mothers, as we saw in the previous data, and a third closely spaced child is at greater risk than a second such child.

They also found, it should be noted, somewhat higher rates among firstborns born after less than a year of marriage in all maternal age groups and all social classes than in first children born later. The differences here were not as great as those between "closely spaced" and "others," but they concluded that " 'duration of marriage', then, apparently reflects something in addition to birth spacing, since first children are also affected by it" (27, p. 105). Clearly children born early in the first year of marriage would either have been born prematurely and exposed to the risks of higher mortality associated with prematurity, or have been conceived premaritally. One can only speculate about the effects of premarital conception, but it seems likely that many mothers in such situations would receive less than optimal prenatal care and be subject to more emotional stress than mothers who conceive their first child after marriage.

Finally, Gordon and Wyon, in their prospective study of children born in Punjabi villages (18, 19) also sought an association between birth interval and mortality rates. They compared the rates in their study children grouped according to the interval between the index child (the individual within a group under study) and the preceding sibling. The data are shown in Table 14. Both neonatal and infant mortality rates were appreciably higher among infants born at short intervals, and the differences observed, even in this relatively small population, were statistically significant.* It is interesting to note that in the environment in which they carried out their study, marked declines in mortality rates occurred only after an interval of 4 years.

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*"p" < .01 to .001.

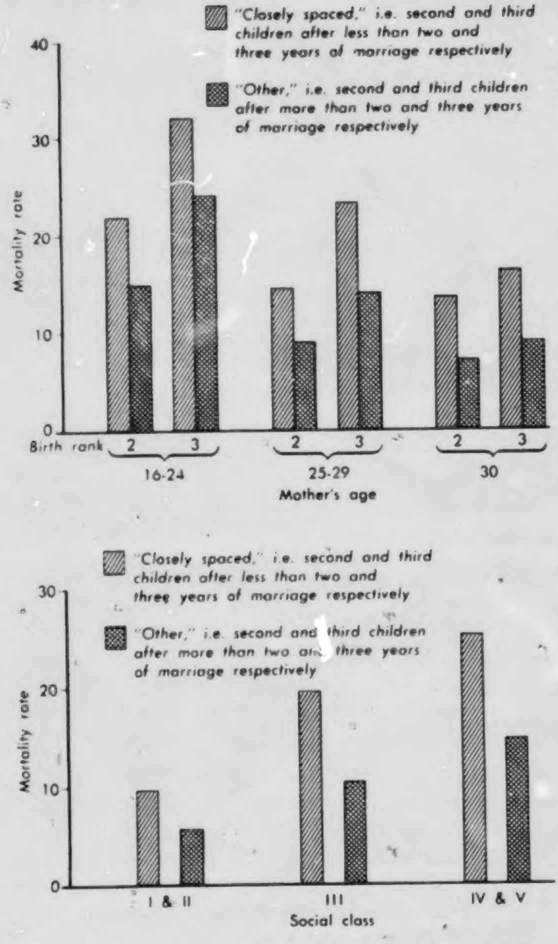

Figure 12. Comparison between postneonatal mortality of closely spaced and other births, (top) comparing three maternal age groups and (bottom) three social class groupings (see Figure 1), England and Wales, 1949-1950.
Source: Morrison et al. (27).

In discussing this finding the authors noted (63) that, "An even greater effect of short interval would be anticipated for the first born of the two siblings" (63, p. 371). On the arrival of a newborn, the preceding child would be deprived of attention from his mother, his nutrition might suffer, or

TABLE 14

Mortality of 1,479 Children Born in Eleven Punjab Villages, by Interval between Observed and Preceding Child, India, 1955-1958

Interval between Births in Months	Number of Births	Neonatal Mortality: Deaths per 1,000 Infants Aged Less Than 28 Days[a]	Infant Mortality: Deaths per 1,000 Population Aged Less Than 1 Year[b]	Second Year Mortality: Deaths per 1,000 Population[c]
Primipara	231	95.2	175.4	68.7
0-11	34	88.2	205.9	105.3
12-23	432	97.2	201.9	54.9
24-35	491	57.0	132.2	89.0
36-47	175	57.1	137.9	57.7
48+	112	35.7	108.1	29.0
Unknown	4	0.0	0.0	0.0
Total	1,479	73.7	160.6	67.9

[a] Number = 1479.
[b] Number = 1457.
[c] Number = 854.

Source: Gordon et al. (63).

weaning occur earlier with the consequent weanling diarrhea so often seen in developing countries (64). The younger he is when this occurs, the more serious the consequences are likely to be.

During the period of their study the index children who could be observed for a sufficient length of time after the birth of a subsequent sibling were few in number. The authors report the following, however:

> From the data which exist, the suggestion is that the effect of a short birth interval is more marked for the first child of a pair than it is for the second, as definite as that is. (63, p. 372)

Birth Interval and Morbidity. No studies of the association between acute illness and birth interval have been found. As remarked earlier, however, death is the extreme end of the spectrum of morbid processes, and the clear-cut associations between mortality rates and birth interval in the post-neonatal and 1-to-4-year age groups seen above would surely lead us to expect an increase in illness among closely spaced children.

With regard to more chronic processes—malnutrition, for example—Gordon's remarks above (63) concerning the effects of interval on the preceding child are particularly relevant. It is also pertinent to note that one of the most severe forms of malnutrition seen in developing countries was called *kwashiorkor* by Williams when she first reported it in 1935 (65). In discussing this many years later (66), she reported that in the African tribal language from which she took the term it means “the disease of the deposed baby when the next one is born.”

We investigated this situation in our study of malnutrition among preschool children in rural Colombia. When children were grouped according to the interval between the index, or observed, child and the following sibling and the prevalence of malnutrition calculated for each group, the results shown in Table 15 were obtained. It is clear that only among children who were over 3 years of age at the birth of their following sibling is there an appreciable decline in the prevalence of malnutrition.

TABLE 15

Malnutrition in Preschool Children by Interval until Next Sibling, Candelaria, Colombia, 1963

Interval between Child and Next Sibling (Months)	Number of Children in Interval Group	Percent of Total Population in Interval Group	Percent of Children in Interval Group Who Are Malnourished
12 or less	50	10.2	40.0
13-18	163	33.3	42.9
19-24	140	28.6	40.0
25-30	71	14.5	50.7
31-36	35	7.2	57.1
37-42	19	3.9	26.3
42	11	2.3	27.3

Source: Wray and Aguirre (10).

The number of preschool children in a family provides an indirect measure of spacing or crowding, since the interval must necessarily be short if there are four or more such children in a family. When the preschool children in Candelaria were grouped in this fashion, the results obtained suggested that this is indeed the case, as may be seen in Table 16. In this case, the difference in the rate among children from families with three or less preschool children, and those from families with four or more is statistically significant.*

Finally, in their study in the district of Bang Pa-In (15), our students in Bangkok investigated the association between interval (again between index child and following sibling) and malnutrition and found a similar, statistically significant effect, as indicated in Table 17.

Birth Interval and Prematurity. Eastman, as mentioned earlier, found high rates of prematurity among children born after a “very brief” interval (62).

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*“p” $< .05$.

TABLE 16

Malnutrition in Preschool Children Grouped by Number of Preschool Children in Their Families, Candelaria, Colombia, 1963

Number of Preschool Children/Family	Total Population	Malnourished Children	
		Number	Percent
1	173	59	34.2
2	364	146	40.1
3	366	147	40.2
4	140	66	47.1
5 or more	25	13	52.0

Source: Wray and Aguirre (10).

TABLE 17

Malnutrition in Preschool Children by Interval until Next Sibling, Bang Pa-In, Thailand, 1969

Interval between Child and Next Sibling (Months)	Total Population	Malnourished Children	
		Number	Percent
Less than 24	43	30	70
More than 24	49	26	53
No child following	119	38	37

Source: *A Health and Demographic Survey of Bang Pa-In* (15).

Douglas, in an investigation of factors associated with prematurity, also examined the effect of birth interval (67). His data were derived from interviews of all mothers who delivered babies during 1 week in March, 1946.* A large number of mothers—90.5 percent, or 13,687—cooperated in the interviews.

Douglas found that social class differences in the risk of prematurity were present but relatively unimportant. Risks appeared to be greatest in "two well-defined groups of working-class women, namely primiparae aged 20 or less, and multiparae with closely spaced pregnancies" (67, p. 159).

After examining his data further, Douglas made the following comment:

> . . . In the present survey 48 percent of working-class mothers spaced their pregnancies either so closely or so far apart that they ran an abnormally high risk of giving birth to a premature baby. If they all could have

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*It was from these children that the sample of 5,386 were selected for follow-up in the National Survey of Health and Development in the United Kingdom, referred to earlier (33, 34, 35).

> been persuaded to leave intervals of 3 to 6 years between births, the prematurity rate for subsequent pregnancies would have been reduced by 21 percent. (67, p. 158)

It should be added that other factors may have been operating in the longer interval group. These women may have had abnormalities which accounted for infertility and prematurity.

Birth Interval and Growth. In the studies reported from Candelaria (10), growth was used as the indicator of nutritional status and was found to be associated with birth interval. One other study, that of Grant (37), also examined the effect of birth interval. She, too, was concerned about the effect of interval on the *preceding* child. Her conclusions regarding the cross-effects of birth rank and family size may be recalled here: ". . . the advent of each additional child to a family acts as a check on the growth of all preceding sibs. . . ." (37, p. 38).

Her findings for birth interval and growth are presented in Table 18. The differences support the view that birth interval has an effect, but she notes that they are not statistically significant.

TABLE 18

Mean Height at Sixth Birthday Related to Interval between Births, London, 1953-1960

Number of Children in Family		Mean Height (cm.)	
		Boys	Girls
2	Mean for all "first of two"	114.0	113.9
	Mean for 1st when 2nd follows within 2 years	113.0	113.1
3	Mean for all "first of three"	115.6	115.0
	Mean for 1st when 2nd follows within 2 years	116.5	113.0
	Mean for all "second of three"	114.6	112.0
	Mean for 2nd when 3rd follows within 2 years	113.2	109.6

Source: Grant (37).

Birth Interval and Intelligence. We saw abundant evidence of a negative correlation between intelligence test performance (on a wide variety of such tests) and family size. There is no such abundance when it comes to evidence concerning the effects of birth interval. In fact, it appears that only in the British National Survey of Health and Development has the matter been examined. Douglas and his colleagues, who reported the findings in this part of the study in the third book of their series (35), were interested in the effects of spacing on vocabulary as well as upon intelligence ("attainment") tests in general.

In order to investigate vocabulary, they limited their consideration to children of middle-class families in which verbal stimulation, when present, would be at a high level and living conditions would deteriorate relatively little even when births were closely spaced. Upon analyzing the data, they found that

> in each size of middle-class family, the vocabulary scores of the children are relatively high when births are widely spaced and relatively low when they are close together. (35, p. 126)

They also noted that although differences in nonverbal test scores were slight, the vocabulary scores decreased in the test at age 8 as the number of other young children in the families increased. In the same children at age 15 a similar fall was observed in the reading test scores, which are obviously related to vocabulary content.

They also examined the effect of interval on general attainment. Pointing out that in three-child families there are twenty-four possible combinations of sex and rank even before birth spacing is considered, he limited his analysis to the data from two-child families. On comparing test scores for three interval groups—2 years or less, 2 to 4-years, and more than 4 years they found

> . . . remarkably consistent differences in which the highest scores, at each age, are made by those with medium birth intervals. There is no evidence however that those with medium birth intervals increase their lead in the attainment tests between 8 and 15 years, and the effect of birth spacing on performance seems to be fully established by the age of 8, when they were first tested. (35, p. 132)

The Effects on Mothers

Earlier comments on the "maternal depletion syndrome" (14) should apply to mothers whose pregnancies are too close together as readily as to those whose pregnancies are too numerous. Short intervals between pregnancies would provide too little time for recovery, especially among women on diets that are only marginally adequate. Common sense and clinical impressions aside, however, the evidence is extremely scanty.

Eastman, in his Johns Hopkins study (62), has provided the only data available. He examined five factors in relation to birth interval: maternal anemia during pregnancy, toxemia of pregnancy, postpartum hemorrhage, puerperal fever, and maternal mortality. Anemia (hemoglobin less than 10 grams per 100 cc of blood) was more common (34.5 percent) in the "very brief" group (interval less than 12 months), but he considered the group too small to warrant conclusions. The incidence of anemia was lower in the other intervals and the differences among them were not significant, although the lowest rate observed (23.9 percent) was in the "long" (more than 48 months) group.

The "most striking effect" he observed was the association between toxemia of pregnancy and birth interval. As he stated in his conclusion,

> The longer the interval between births, the more likely the mother is to suffer from some form of hypertensive toxemia of pregnancy. The incidence of this complication is lowest when the interval is twelve to twenty-four months, significantly higher when it is twenty-four to forty-eight months, and much higher when it exceeds four years. In the present study this was equally true of white and colored ward patients and private patients. In patients who have had a previous hypertensive toxemia of pregnancy, the likelihood of repetition becomes progressively greater as the interval becomes longer. (62, p. 462)

Eastman was unable in this sample to control for maternal age which is also associated with toxemia of pregnancy. Of course, as interval increases, age of mother increases.

None of the other factors he examined, hemorrhage, infection, or maternal mortality, was found to be associated with birth interval.

THE QUESTION OF CAUSE AND EFFECT

Investigations of the causal role of family size or birth interval in regard to the "effects" described earlier are extremely few in number. The problem, as noted from the start, is complicated by the fact that all of these effects are unquestionably the product of many interacting causal factors. Nevertheless, there is some evidence, both direct and indirect, concerning the place of these two factors in the causal web.

Common Sense Effects

Family Size and Food Expenditures. Wherever families are dependent on cash income for the purchase of food, every additional member of the family adds to the strain on the family food budget. Our study in Candelaria (10) showed this clearly, as may be seen in Figure 13, in which per capita food expenditures per week are plotted against the number of living children per family. In situations in which families must buy their food and when food expenditures fall to such an extent in association with increases in family size, then common sense suggests that nutrition would suffer and the increase in malnutrition with family size that we saw in Table 2 should not be surprising.

There is some evidence to show that this phenomenon is not limited to agricultural day laborers in a developing country. In the United States an

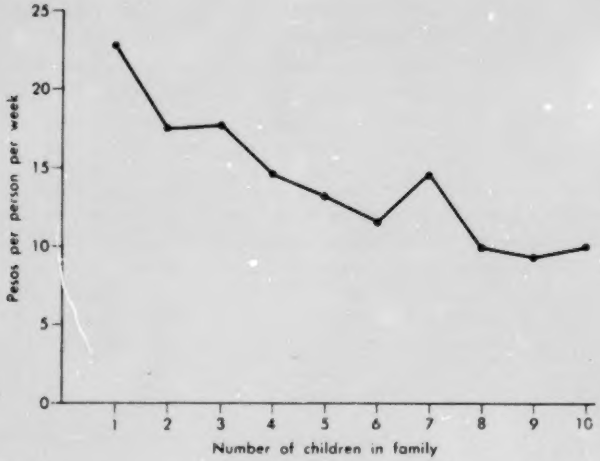

Figure 13. Per capita food expenditures per week by number of children in the family, Candelaria, Colombia, 1963-1964.

Source: Wray and Aguirre (10).

extensive survey of consumer expenditures and income was carried out by the U.S. Department of Labor and the U.S. Department of Agriculture in 1960-61. Their report (68) includes a detailed review of expenditures by income group as well as by family size.

In Table 19 the figures were obtained simply by expressing the reported expenditures for food as a percentage of the total expenditures in each family size-income class category. The data show two things clearly: as income rises, families spend a smaller proportion of it for food, but as family size increases, a higher percentage is spent for food at all income levels. This parallels the observations in Colombia exactly. In Table 20, however, we see that the end result of spending a higher proportion of income for food is also parallel to the situation in Colombia—the average per person expenditures fall significantly as family size increases. The total family expenditures increase with income, but the average spent per person decreases with family size at every level, including the highest income classes. Furthermore, the decreases are considerable: six-or-more-person families are spending around 40 percent less per person than are the three-person families at every income level up to $15,000 or higher.*

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*The report includes data on expenditures for food prepared at home and food away from home. Only the former were used in these calculations. The rationale for this choice was: (a) It is food prepared at home that largely determines the nutrition of

TABLE 19

Expenditures for Food, as Percent of Total Expenditures for Current Consumption, by Family Size and Income Class, United States, 1960-1961

(percent)

Income Class:[a] (U.S. Dollars/ Family/Year	Family Size			
	3 Persons	4 Persons	5 Persons	6 or More
	Number of Famlies in Sample			
	2,486	2,241	1,449	1,512
$ 1,000- 1,999	28.0	26.5	29.2	34.0
2,000- 2,999	25.0	25.4	27.6	32.1
3,000- 3,999	22.5	22.8	24.1	29.6
4,000- 4,999	20.5	22.2	25.2	27.4
5,000- 5,999	19.7	22.2	22.7	27.1
6,000- 7,499	18.6	20.6	22.4	24.7
7,500- 9,999	17.7	19.0	21.3	22.4
10,000-14,999	14.8	16.2	18.0	20.8
15,000	11.9	13.2	15.4	16.2
Average	18.6	19.7	21.4	24.4

[a] The data for the income class less-than-$1,000 have been omitted; the effect of income taxes at this level, as noted in the Report, made the figures erratic; also the relationship between income and current consumption is often highly erratic.

Source: BLS Report No. 237-93, Part 2, Tables 11D, E, F & G, 1966 (69).

TABLE 20

Calculated Food Expenditures in 1960 Dollars per Person per Week, by Family Size and Income Class, United States, 1960-1961

($'s/week/person)

Income Class	Family Size			
	3 Persons	4 Persons	5 Persons	6 or More
$ 1,000- 1,999	3.55	2.75	2.23	1.74
2,000- 2,999	4.37	3.86	3.19	2.42
3,000- 3,999	5.24	4.36	3.93	3.09
4,000- 4,999	5.93	4.95	4.48	3.61
5,000- 5,999	6.45	5.73	4.74	4.06
6,000- 7,499	7.25	6.13	5.60	4.44
7,500- 9,999	8.17	6.39	5.21	4.97
10,000-14,999	8.8	7.88	6.67	5.47
15,000	9.78	8.89	8.98	7.04

Source: BLS Report No. 237-93, Suppl. 3-Part A, Tables 28E, F, G & H, 1966 (70).

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children; and (b) the expenditures for food away from home represent a significant proportion of the total food budget only in the higher income groups.

The significance of the figures in Table 20 can be appreciated by relating them to food prices current at the time of the survey. The United States Department of Agriculture periodically issues food plans with costs, devised to provide a nutritionally adequate diet for individuals of both sexes and various ages in a family of four. I have reviewed their plan for October of 1960 (71). Taking the estimated cost of 1 week's food for the "low-cost plan" (and ignoring the "moderate-cost" and "liberal" plans, which are approximately 25 percent and 50 percent more expensive respectively), a crude average of around $5.50 per person per week can be calculated. (The range is from $3.00 per week for children under 1 year of age to $8.60 per week for nursing mothers.) If these estimates are valid, then it is clear that many of the families surveyed in 1960 were not spending enough to provide an adequate diet.

Some benefits from quantity food purchase and preparation are possible in larger families. In an earlier study (72) it was found that 48.7 percent of families of six or more met recommended dietary allowances on expenditures of $4.00 per person per week while only 31.5 percent of the three-person families did so. At expenditures of $4.00 to $5.99 per person per week, 58.1 percent of three-person families and 85.8 percent of six-or-more-person families met the recommendation. "Economy of scale," then, is possible, but it is clear that many larger families, especially in the lower income groups, cannot provide an adequate diet with the amounts they are spending.

Family Size and Medical Expenditures. It is relevant here to examine the effects of family size on medical expenditures as revealed in a Bureau of Labor Statistics (BLS) Report (68-70). Table 21 shows expenditures for medical care, as a percentge of total expenditures, calculated in the same way as in Table 19. The differences in the two tables are interesting. Although actual cash expenditures for medical care increase somewhat, the percentage does not increase with income, as is the case with regard to food expenditures. Unlike food expenditures, medical care expenditures *decrease* as family size increases. In spite of the fact that the need for medical care will increase, as we have seen from the morbidity data associated with family size, expenditures do not. It appears, then, that larger families may be depriving themselves of medical care in order to meet other needs. No data are available to indicate whether the amount of free medical care received by low income families would alter this picture. However, free medical programs would not have any appreciable effect on families with incomes higher than $3,000 or $4,000 per year.

Family Size and Maternal Care. Preschool children are very largely dependent on their mothers. The quality of maternal care provided determines many aspects of child health. With these truisms in mind, it is of interest to review the effects of family size on maternal care, as shown in two British

TABLE 21

Expenditures for Medical Care as Percent of Total Expenditures for Current Consumption, by Family Size and Income Class, United States, 1960-1961

(percent)

Income Class	Family Size 3 Persons	4 Persons	5 Persons	6 or More
$ 1,000- 1,999	7.4	9.3	6.9	4.9
2,000- 2,999	7.6	6.0	4.5	4.5
3,000- 3,999	7.1	7.9	5.7	5.0
4,000- 4,999	6.8	6.2	5.6	5.5
5,000- 5,999	6.6	6.6	6.4	5.9
6,000- 7,499	6.6	6.4	6.1	5.8
7,500- 9,999	6.3	6.4	6.1	6.1
10,000-14,999	6.3	5.7	6.8	6.3
15,000	6.9	6.2	5.8	4.4
Average	6.6	6.4	6.1	5.8

Source: BLS Report No. 237-93, Part 2, Tables 11D, E, F & G, 1966 (69).

studies that have examined this relationship. In their classic study, *A Thousand Families in Newcastle upon Tyne* (73), Spence and his associates found a statistically significant correlation between "consistently unsatisfactory" maternal care and number of children, although they recognized that other social factors, as well as inadequate housing and overcrowding, were involved.

The matter was examined in more detail in the National Survey of Health and Development, mentioned earlier, and reported in *Children Under Five* (33). Like the authors of the Newcastle study, they experienced difficulty in trying to eliminate subjective judgments from the scoring for quality of maternal care. The differences they observed, however, left them in little doubt that the number of children constitutes a significant factor. They found that the "... efficiency of the mother is closely related to the size of her family in each social group, though the relationship is closest in the manual workers' families." Their data for this group are presented in Table 22.

In their subsequent evaluation of the growth of the study children, they made several interesting observations about interrelations between nutrition and maternal care:

> The two groups where maternal care appeared to have no effect on growth were at either end of the social scale, i.e., the professional and salaried and the semiskilled and unskilled manual workers. It is possible that when a certain level of material prosperity is reached in the family the nutrition of the child is likely to be adequate whatever the capacity of the mother. Below a certain level, on the other hand, even the best manager

TABLE 22

Proportion of Mothers Rated as Best in All Aspects of Child Care in Skilled Manual Workers' Families with Varying Numbers of Dependent Children, England, 1948-1950

Number of Dependent Children	Proportion of Mothers Rated Best in All Aspects of Care (Percent)	Number of Families
1	44.7	262
2	33.0	441
3	27.3	286
4	16.1	112
5 or more	10.1	80

Source: Douglas and Blomfield (25).

> cannot provide an adequate diet for her child with the money available. . . . It is of interest that even in the professional and salaried group maternal care seems to become of importance in relation to the growth of fourth- or later-born children. With blackcoated workers it only *becomes* important after the first child, whereas with skilled manual workers it *ceases* to be important after the third. (33, italics theirs)

The Aggravating Effects of Family Size

In examining the data obtained in the study of preschool children in Candelaria (10), family size was one of several factors found to be associated with malnutrition. Some of the interactions between these factors were examined. The aggravating effect of increasing numbers of children became apparent when cross-correlations were made with some of the other factors associated with malnutrition. Initial analysis of the data, for example, had shown that malnutrition was more prevalent among the children of older mothers. This was rather surprising since we expected that older mothers, having learned from experience, might be more competent. When we controlled for family size, however, the reason became clear. The findings are shown in Table 23, where it may be seen that the prevalence of malnutrition in children of older mothers who have fewer children is well below the communitywide average. The problem in Candelaria is that most older mothers have numerous children and however competent they may be, they were unable to meet the needs of too many children, just as Douglas and Blomfield observed in England.

We also found that children of literate mothers were less likely to be malnourished than those whose mothers were illiterate (38 percent mal-

TABLE 23

The Effect of Numbers of Living Children on Various Factors Correlated with Malnutrition in Preschool Children, Candelaria, Colombia, 1963

Factor	Total Population in Category	Malnourished Children	
		Number	Percent
Vulnerable ages (12-35 months)			
5 or less living children	312	154	49.4
6 or more living children	94	53	56.4
Maternal illiteracy			
5 or less living children	235	110	46.8
6 or more living children	71	37	52.1
Maternal age (30 or more years)			
5 or less living children	71	25	35.2
6 or more living children	121	59	48.7[a]

[a] "p" = less than 0.05; X^2 = 3.34.

Source: Wray and Aguirre (10).

nourished among 777 children of literate mothers; 48 percent malnourished among 317 children of illiterate mothers). If we assume that the education of the mothers affects the quality of the care they provide their children, this might have been expected. Here, too, however, numbers made a difference: in the children of illiterate mothers there was a difference in the prevalence of malnutrition between those with fewer and those with more siblings. Even these mothers apparently could cope more effectively if they were not overwhelmed by numbers, as may also be seen in Table 23.

Our basic survey had shown that the children most likely to be malnourished were those between 12 and 36 months of age. Here, too, family size had a negative influence: children in this most susceptible age group from the larger families were distinctly more likely to be malnourished than those from smaller families, as is evident in Table 23.

It seems quite evident that under the circumstances which prevail in Candelaria, parents, poor as they are, are better able to provide for their children if the numbers are not too great. Whether the problem be poverty or ignorance, both of which are almost universally implicated as causal factors in malnutrition, the effects of either are made worse by too many children in the family.

Douglas and Blomfield, in their discussion of the interrelations of family size with other factors affecting growth in the National Study children, made the following comments:

> In the early years when the cost of feeding a child is small, growth must depend largely on the patience and conscientiousness of the mother and on the adequacy of her knowledge. And we have seen that the standard of maternal care declines with increasing family size, in the poorer groups especially. At later ages the cost of the food itself becomes important, and the poor growth of the later-born child will be due either to an inadequate family income or unwise spending. The marked relation between the standard of maternal care and growth in those families whose income, though not large, should be sufficient—suggests that spending habits are important. But the lack of such a relationship in the large families of skilled manual workers, and in all families in the poorest groups, suggests that below a certain level of income even the most careful spending will not provide a diet fully adequate for growth. (33)

It seems fair to say that in their families, as in those in Candelaria, family size could be termed an aggravating factor.

Process-of-Elimination Effects

By this rather cumbersome term is meant the effects associated with family size which remain after other factors considered causal are controlled for. The data need not be reviewed in detail here, but several of the studies described earlier presented relevant evidence and three are worth mentioning specifically.

Morris and his associates found that when they controlled for social class and maternal age, infant mortality increased with parity and the increase was relatively greatest in the younger mothers in the ***highest*** social classes. (See Figure 3.) Whatever benefits one might expect from improved environmental circumstances associated with higher social classes are offset by family size. This is not to say, however, that family size is the only residual variable remaining to account for variations in mortality. Maternal age is also involved, and this prompts a consideration of maternal competence, since it is the younger mothers who have the problem. These two factors, and probably others, are almost certainly interacting.

The data from Douglas and his colleagues also showed clear-cut effects on growth and intelligence associated with family size when social class was held constant. What is clearly evident from their data (see Table 5) is that children from small families in the lowest social classes grow as well as their age peers in the higher social classes. In other words, lower-class mothers can and do overcome, or compensate for, whatever factors are operating to interfere with growth and development, providing the pressure of numbers is not too great. On the other hand, family size has no effect in the higher social classes.

This is not the case, however, with regard to intelligence. Table 9 shows that test scores are higher in the smallest families, but social class differences remain. What is perhaps more important is the fact that the effects of family size are evident within each class, even the highest.

Direct Evidence

There is one study, to my knowledge, in which an hypothesis concerning the nature of the effect of family size was developed and tested. Nisbet tested his hypothesis concerning effects on intelligence among Aberdeen school children (74). His subjects were the children passing from primary to secondary school in 1949 and 1959–around 2,500 each year–who were given a battery of intelligence tests. His idea was that the greater adult contact to be expected in smaller families would stimulate the development of better verbal ability and that this would account for some of the association between family size and intelligence test performance.

He tested this first by examining the association between verbal score (English attainment) and family size, while holding intelligence scores constant. He found, "All these partial correlations are negative and significantly different from zero" (i.e., highly unlikely to occur because of sampling fluctuations). Second, he compared the negative correlation with family size in tests dependent on verbal ability with those of tests more or less independent of such ability. He expected, and found, a greater degree of negative correlation in the verbal test, though the difference was not too great. Finally, he examined the negative correlation at various ages on the assumption that the effect of the environmental influence–the decreased contact with adults in larger families–"will tend to be greater at later ages when the cumulative effect of the environment begins to show itself." The negative correlations were indeed found to increase, both when different groups of children, aged 7, 9, and 11, were compared* and also when the results at ages 7, 9, and 11 of the same children were compared.†

Nisbet concludes

> . . . that part of (though not all) the negative correlation of family size and intelligence test score may be attributed to an environmental influence of the size of family on verbal development and through it on general mental development. (74, p. 286)

Here, then, appears to be some clarification of the role of one element, contact with adults, which may account for variation in intelligence with family size. His data also show that the effect increases with increasing age of the child. Whatever the precise causal interrelations may be, it is clear that the process continues throughout childhood.

*r's = -.256, -.287, and -.333 respectively.

†r's = -.209, -.226, and -.289 respectively.

THE IMPLICATIONS OF THE EVIDENCE

The effects associated with family size on the well-being of individuals–primarily the children–in a family are varied, but serious: increased illness, including malnutrition, serious enough in younger children to increase mortality rates; less satisfactory growth and intellectual development; increased illness in the parents, as well as clear-cut economic and emotional stresses. Family size is not the only cause of these effects, but it is clearly implicated as an important element in the interacting network of causal factors.

The evidence regarding the effects of birth interval is less extensive than that relating to family size but no less disconcerting. At first glance the effects appear to be quite similar–increased mortality, increased morbidity, less satisfactory growth, and less adequate intellectual development. It appears, in fact, that excessive *crowding* of children–too many children too quickly–in a family with a young mother will produce the same effects quickly that excessive *numbers* of children will produce more slowly in larger families.

Do these effects matter? Are the consequences of excessive family size or inadequate spacing of children at the family level sufficiently serious to be of concern to policymakers or economic planners? What is needed for a confident answer to such questions is data that would allow us to move from the qualitative description of effects provided by the evidence available to quantitative estimates of the overall impact of such effects. Such data are not available. In a way this is not surprising. Gunnar Myrdal, an internationally preeminent economist, was compelled, because of a similar lack of data, to justify the provision of health care in developing countries as a "moral imperative" in his monumental *Asian Drama* (75). In the light of the evidence we have seen, one might equally well consider the limitation of family size or the better spacing of children a "moral imperative."

One can, in fact, make some quantitative estimates with the data available–even while acknowledging the need for better information. Given the data from Scotland that the *average* I.Q. of children with five or more siblings is 91, 22 points below that of only children, what are the implications for developing countries? In Candelaria, Colombia, we found that 27 percent of the preschool children had five siblings or more. The implication of the association between family size and intelligence is such that it suggests that a fourth of the population may be subject to serious impairment of its intellectual development. Evidence from the United States has a direct bearing here; the President's Task Force on Manpower Conservation, appointed to investigate why so many youths were unfit for military service, found that 47 percent of all young men rejected on mental grounds came from families with six or more children (76). Similar quantitative data were provided by Pasamanick and Lilienfield (77) in their examination of maternal and fetal factors associated with the development of mental deficiency. They found that the rate of mental deficiency was approximately 40 per 1,000 among firstborn children, rising to 140 per 1,000 for fourth children, and then to 400 per 1,000 in sixth children–a tenfold increase over the rates in first children.

It is also appropriate here to quote a statement published by Dr. Cicely Williams:

> . . . the "survival of the fittest" is a misapplied cliche. It was not recognized that the same conditions that will kill 30 percent of the babies in the first year of life will also produce a large proportion of persons with damaged lives who will be a burden for years and perish at a later date. (78, p. 1280)

Infant mortality rates are no longer so high; infant mortality attributable to family size was probably never that high, though it is interesting to note that in discussing population change in England in the eighteenth century McKeown said:

> . . . Marriage rates were high in the eighteenth century and an increase in the birth rate would have been due chiefly to addition of children to existing families, rather than to an increase in the number of one-child families. Hence any increase in the birth rate would have been offset largely by an *increase in postnatal mortality*. (79, italics mine)

Even though mortality rates have declined since many of the studies relating them to family size were carried out, we know that such rates still prevail in many parts of the world, and there is no reason to doubt that the effects associated with family size are still present. Beyond that, we do know more now about the consequences that might be expected among the children who do not die. For example, the steadily accumulating knowledge concerning the permanent effects of malnutrition on the growth of the brain in young children (9) ought to give pause to anyone concerned about the human resources of a nation. The evidence here is such that any measure that might reasonably be expected to reduce the prevalence of malnutrition is worth supporting to the fullest extent possible.

Would reducing family size, or increasing birth interval, reduce the effects we have seen? Once again, the evidence available is inadequate for an unqualified answer. Such evidence as there is suggests an affirmative answer, derived from the fact that in those studies in which social class as well as family size were examined, the lower-class mothers who had only one or two children seem to have provided as well for their children as the upper-class mothers. This leaves unanswered, of course, the most important question: would the parents of large families have provided better for their children if they had fewer of them? The problem posed here could be stated in the form of two alternative hypotheses:

1. Parents who *do* limit family size are qualitatively different from those who do not. This difference produces (among other things)–
   a. Smaller numbers of children *and*
   b. Healthier, more intelligent children

OR

2. Parents who *do not* limit family size have the same potential as those who do, but–
   a. Because they lack knowledge of, or access to, means of limiting family size, they fail to do so, and,
   b. *Because* of excessive family size, their children are subject to more illness, receive less adequate nutrition, and fail to achieve their full potential for physical and intellectual development.

Until better evidence is available, and such evidence is urgently needed, it will be impossible to assert that either of these is correct. In the meantime, however, there is evidence that mothers *would* like to control their family size. K.A.P. surveys all over the world (80) have shown repeatedly that mothers with three or four children *want no more.* For lack of access to adequate and effective means of limiting family size, many of these *will* have more children, and there is no way to know whether the children they already have would have been better cared for if the ones their mothers did not want had not been born. The evidence, at the very least, suggests that they would have.

For everyone concerned about the welfare of children, everyone who believes that each child born deserves a chance to achieve his own best potential, the message is clear: we must, at the very least, make it possible for parents who do want to control their family size to do so. If effective means are available, there is reason to believe that many will use them–and be better parents as a consequencce.

References

1. Freedman, Ronald, *The Sociology of Human Fertility, A Report and Bibliography*. Oxford: Basil Blackwell, 1963.
2. Stycos, J. Mayone, "Demography and Family Planning," *Teaching Family Planning to Medical Students*. New York: Josiah Macy, Jr., Foundation, 1968. pp. 23-40.
3. Berelson, Bernard, "Beyond Family Planning," *Studies in Family Planning*, 38, 1969. pp. 1-16.
4. Hardin, Garrett, "The Tragedy of the Commons," *Science*, 162, 1968. pp. 1243-1248.

5. Taylor, Carl E., "Five Stages in a Practical Population Policy," *Internat Development R*, 10, 1968. pp. 2-7.
6. Day, Richard L., "Factors Influencing Offspring. Number of Children, Interval between Pregnancies, and Age of Parents," *Amer J Dis Child*, 113, 1967. pp. 179-185.
7. Dingle, J. H., G. F. Badger, and W. S. Jordan, *Illness in the Home: Study of 25,000 Illnesses in a Group of Cleveland Families.* Cleveland: Press of Western Reserve Univ., 1964.
8. *Preschool Child Malnutrition: Primary Deterrent to Human Progress.* Pub. 1282, National Academy of Sciences-National Research Council. Washington, 1966.
9. Scrimshaw, N. S., and John E. Gordon, eds., *Malnutrition, Learning, and Behavior.* Cambridge, Massachusetts: The M.I.T. Press, 1968.
10. Wray, Joe D., and Alfredo Aguirre, "Protein-Calorie Malnutrition in Candelaria, Colombia. I. Prevalence; Social and Demographic Factors," *J Trop Pediat*, 15, 1969. pp. 76-98.
11. Gomez, F., et al., "Malnutrition in Infancy and Childhood with Special Reference to Kwashiorkor," *Advances in Pediatrics*, S. Z. Levine, ed. Chicago: Yearbook Publishers, 1955. Vol. VII, pp. 131-169.
12. Bengoa, J. M., D. B. Jelliffe, and C. Perez, "Some Indicators for a Broad Assessment of the Magnitude of Protein-Calorie Malnutrition in Population Groups," *Amer J Clin Nutr*, 7, 1959. pp. 714-720.
13. World Health Organization, *Methods of Planning and Evaluation in Applied Nutrition Programs.* Technical Report No. 340. Geneva: World Health Organization, 1966.
14. Jelliffe, D. B., *The Assessment of the Nutritional Status of the Community.* World Health Organization Monograph Series No. 53. Geneva: World Health Organization, 1966.
15. *A Health and Demographic Survey of Bang Pa-In.* Bangkok: Community Health Care Program, Ramathibodi Hospital Faculty of Medicine, 1969, Mimeo.
16. Robertson, I., and M. Kemp, "Child Health and Family Size," *S Afr Med J*, 34, 1963. pp. 888-893.
17. Chen, Edith, and Sidney Cobb, "Family Structure in Relation to Health and Disease," *J Chronic Dis*, 12, 1960. pp. 544-567.
18. Gordon, John E., "Social Implications of Health and Disease," *Arch Environ Health*, 18, 1969. pp. 216-234.
19. Wyon, J. B., and J. E. Gordon, "A Long-Term Prospective-Type Field Study of Population Dynamics in the Punjab, India," *Research in Family Planning*, Clyde V. Kiser, ed. Princeton: Princeton Univ. Press, 1962. pp. 17-32.
20. Morris, J. N., and J. A. Heady, "Social and Biological Factors in Infant Mortality, I. Objects and Methods," *Lancet*, 1, 1955. pp. 343-349.
21. Heady, J. A., C. Daley, and J. N. Morris, "Social and Biological Factors in Infant Mortality, II. Variations of Mortality with Mother's Age and Parity," *Lancet*, 1, 1955. pp. 395-397.

22. Daley, C., J. A. Heady, and J. N. Morris, "Social and Biological Factors in Infant Mortality III. The Effects of Mother's Age and Parity on Social-Class Differences in Infant Mortality," *Lancet*, 1, 1955. pp. 445-448.
23. Heady, J. A., et al., "Social and Biological Factors in Infant Mortality IV. The Independent Effects of Social Class, Region, the Mother's Age and Her Parity," *Lancet*, 1, 1955. pp. 499-502.
24. Morris, J. N. and J. A. Heady, "Social and Biological Factors in Infant Mortality, V. Mortality in Relation to the Father's Occupation," *Lancet*, 1, 1955. pp. 554-560.
25. Heady, J. A., and J. N. Morris, "Social and Biological Factors in Infant Mortality, VI. Mothers Who Have Their Babies in Hospitals and Nursing Homes," *Brit J Prev Soc Med*, 10, 1956. pp. 97-106.
26. Heady, J. A., and J. N. Morris, "Variations of Mortality with Mother's Age and Parity," *J Obstet Gynaec Brit Emp*, 66, 1959. pp. 577-593.
27. Morrison, S. L., J. A. Heady, and J. N. Morris, "Mortality in the Post-neonatal Period," *Arch Dis Child*, 34, 1959. pp. 101-114.
28. Heady, J. A., and M. A. Heasman, *General Register Office Studies on Medical and Population Subjects, No. 15, Social and Biological Factors in Infant Mortality*. London: H. M. Stationery Office, 1959.
29. Chase, Helen C. *The Relationship of Certain Biologic and Socio-Economic Factors to Fetal, Infant and Early Childhood Mortality. I. Father's Occupation, Parental Age and Infant's Birth Rank.* Albany, New York: New York State Department of Health, 1961. Mimeo.
30. Chase, Helen C. *The Relationship of Certain Biologic and Socio-Economic Factors to Fetal, Infant and Early Childhood Mortality. II. Father's Occupation, Infant's Birth Weight, and Mother's Age.* Albany, New York: New York State Department of Health, 1962. Mimeo.
31. Yerushalmy, J., et al., "Longitudinal Studies of Pregnancy on the Island of Kauai, Territory of Hawaii, I. Analysis of Previous Reproductive History," *Amer J Obstet Gynec* 71, 1956. pp. 80-96.
32. Newcombe, H. B., and O. G. Tarendale, "Maternal Age and Birth Order Correlations: Problems of Distinguishing Mutational from Environmental Components," *Mutat Res*, 1, 1964. pp. 446-467.
33. Douglas, J. W. B., and J. M. Blomfield, *Children Under Five*. London: Allen and Unwin, Ltd., 1958.
34. Douglas, J. W. B., *The Home and the School*. London: MacGibbon and Kee, Ltd., 1964.
35. Douglas, J. W. B., J. M. Ross, and H. R. Simpson, *All Our Future*. London: Peter Davies, 1968.
36. Douglas, J. W. B., and H. R. Simpson, "Height in Relation to Puberty, Family Size and Social Class, A Longitudinal Study," *Milbank Mem Fund Quart*, 40, July 1964. pp. 20-35.
37. Grant, M. W., "Rate of Growth in Relation to Birth Rank and Family Size, *Brit J Prev Soc Med*, 18, 1964. pp. 35-42.
38. Tanner, J. M., Earlier Maturation in Man," *Sci Amer*, 218, 1968. pp. 21-27.

39. Cone, T. E., "Secular Acceleration of Height and Biological Maturation in Children during the Past Century," *J Pediat*, 59, 1961. pp. 736-740.
40. "Early Maturing and Larger Children" (Editorial), *Brit Med J*, 5250, 1961. pp. 502-503.
41. Anastasi, Anne, "Differentiating Effect of Intelligence and Social Status," *Eugen Quart*, 6, 1959. pp. 84-91.
42. Hunt, J. McV., *Intelligence and Experience*. New York: The Ronald Press Co., 1961.
43. Vernon, P. E., "Recent Investigations of Intelligence and Its Measurements," *Eugen Rev*, 43, 1951. pp. 125-137.
44. Reed, Elizabeth W., and Sheldon C. Reed, *Mental Retardation: A Family Study*. Philadelphia: W. B. Saunders Co., 1965.
45. Scott, J. A., "Intelligence, Physique and Family Size," *Brit J Prev Soc Med*, 16, 1962. pp. 165-173.
46. Tanner, J. M., "Galtonian Eugenics and the Study of Growth" (The Galton Lecture), *Eugen Rev*, 58, 1966. pp. 122-135.
47. Rosenthal, Robert, and Lenore Jacobson, "Teacher Expectations and the Disadvantaged," *Sci Amer*, 218, 1968. pp. 19-23.
48. Hare, E. H., and G. K. Shaw, "A Study in Family Health: I. Health in Relation to Family Size," *Brit J Psyhciat*, III, 1965. pp. 461-466.
49. Scotch, Norman A., "Sociocultural Factors in the Epidemiology of Zulu Hypertension," *Amer J Public Health*, 53, 1963. pp. 1205-1213.
50. Murphy, Jane M., "Cultural Change and Mental Health among Yoruba Women of Nigeria." Mimeo., no date, no place.
51. Pyke, D. A., "Parity and the Incidence of Diabetes," *Lancet*, 1, 1956. pp. 818-820.
52. Wright, N. H., "Maternal Mortality in Ceylon: Trends, Causes, and Potential Reduction by Family Planning." Presented at Association of Obstetrician-Gynecologists of Ceylon, August 21-22, 1968. Unpublished.
53. Eastman, N. J., and L. M. Hellman, *Williams' Obstetrics*, 12th ed. New York: Appleton-Century-Crofts, 1961.
54. Perkin, G. W., "Pregnancy Prevention in High-Risk Women, Strategy for New National Family Planning Programs." Presented at Conference on Family Planning and National Development (IPPF), Bandung, June 1-7, 1969.
55. Ravenholt, R. T., and H. Frederiksen, "Numerator Analysis of Fertility Patterns," *Public Health Rep*, 83, 1968. pp. 449-457.
56. *A Health and Demographic Survey of Villages in Bang Chan, Thailand, 1968.* Ramathibodi Hospital Faculty of Medicine, Bangkok, 1968. Mimeo.
57. Hawley, Amos H., and Prachuabmoh Visid, "Family Growth and Family Planning in Rural District of Thailand," *Family Planning and Population Programs.* Chicago: University of Chicago Press, 1965. pp. 523-544.
58. Cowgill, D. O., et al., *Family Planning in Bangkhen, Thailand.* Bangkok: Center for Population and Social Research, Mahidol University, 1969.

59. Huse, Elizabeth, "Infant Mortality. Results of a Field Study in Gary, Indiana, Based on Births in One Year." Children's Bureau Publication No. 112. Washington: Government Printing Office, 1923. pp. 44-45. Cited by Eastman (62).

60. Woodbury, Robert M., "Causal Factors in Infant Mortality. A Statistical Study Based on Investigations in Eight Cities." Children's Bureau Publication No. 142, Washington: Government Printing Office, 1925. pp. 60-67. Cited by Eastman (62).

61. Yerushalmy, J., "On the Interval Between Successive Births and Its Effect on Survival of Infant. I. An Indirect Method of Study," *Hum Biol*, 17, 1945. pp. 65-106.

62. Eastman, Nicholson J., "The Effect of the Interval Between Births on Maternal and Fetal Outlook" *Amer J Obstet Gynec*, 47, 1944. pp. 445-466.

63. Gordon, J. E., J. B. Wyon, and W. Ascoli, "The Second Year Death Rate in Less Developed Countries," *Amer J Med Sci*, 254. pp. 357-380.

64. Gordon, J. E., I. E. Chitkaru, and J. B. Wyon, "Weanling Diarrhea," *Amer J Med Sci*, 245, 1963. pp. 345-377.

65. Williams, Cicely D., "Kwashiorkor," *Lancet*, 2, 1935. p. 1151.

66. Williams, Cicely D., "The Story of Kwashiorkor," *Courrier*, 8, 1963. pp. 361-367.

67. Douglas, J. W. B., "Some Factors Associated with Prematurity: The Results of a National Survey, *J Obstet Gynaec Brit Emp*, 57, 1950. pp. 143-170.

68. *Survey of Consumer Expenditures.* BLS Report No. 237-93. Washington: U.S. Dept. of Labor, Bureau of Labor Statistics, 1966.

69. Ibid., Supplement 2

70. Ibid., Supplement 3, Part A, May 1966.

71. "Food and Home Notes," October 5, 1960. Washington: U.S. Department of Agriculture, Office of Information, 1960.

72. *Family Food Plans and Food Costs.* Home Economics Research Report No. 20. Washington: U.S. Department of Agriculture, Consumer and Food Economics Research Division, 1962.

73. Spence, Sir James, et al., *A Thousand Families in Newcastle upon Tyne.* London: Oxford University Press, 1954.

74. Nisbet, John, "Family, Environment, and Intelligence," *Education, Economy, and Society*, A. H. Halsey, J. Floud, and C. A. Anderson, eds. New York: Free Press, 1961.

75. Myrdal, Gunnar, *Asian Drama: An Inquiry into the Poverty of Nations.* New York: Pantheon, 1968.

76. *One-Third of a Nation: A Report on Young Men Found Unqualified for Military Service.* The President's Task Force on Manpower Conservation. Washington: Government Printing Office, 1964.

77. Pasamanick, B., and A. M. Lilienfeld, "The Association of Maternal and Fetal Factors with the Development of Mental Deficiency: II. Relationship to Maternal Age, Birth Order, Previous Reproductive Loss and Degree of Deficiency," *Amer J Ment Defic*, 60, 1956. p. 557.

78. Williams, Cicely D., "Kwashiorkor," *JAMA*, 153, 1953. pp 1280-1285.
79. McKeown, Thomas, "Medicine and World Population," Mindel C. Sheps, and Jeanne C. Ridley, eds. *Demographic History and Population Policy*, Pittsburgh: Univ. of Pittsburgh Press, 1965. pp. 25-40.
80. Mauldin, W. Parker, "Fertility Studies: Knowledge, Attitude and Practice, *Studies in Family Planning*, 7, 1966. pp. 1-10.

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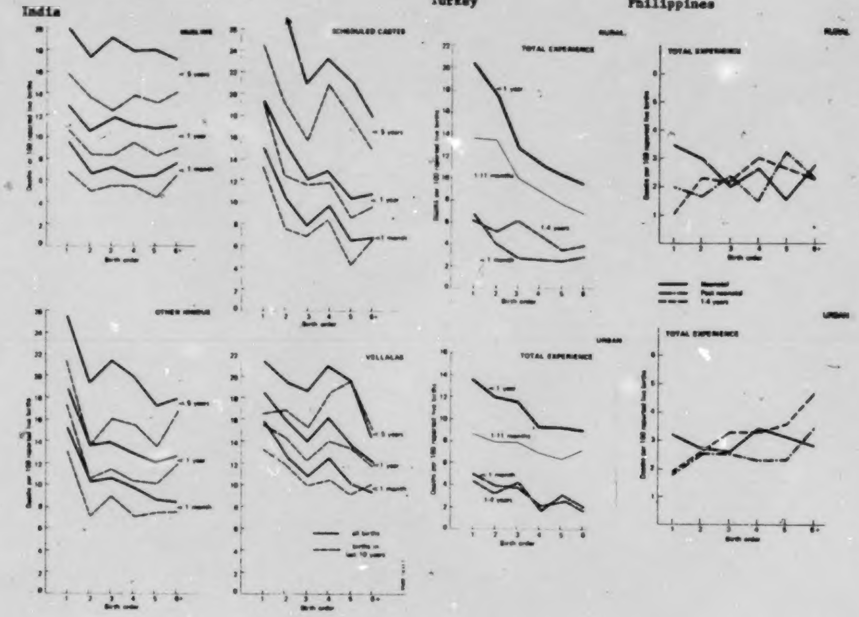
Figure 1

FIG. 4.A.3. CHILD MORTALITY BY CULTURE AND BIRTH ORDER: TOTAL AND DURING PRECEDING 10 YEARS



Source: Omran and Standley (1976)

Figure 2

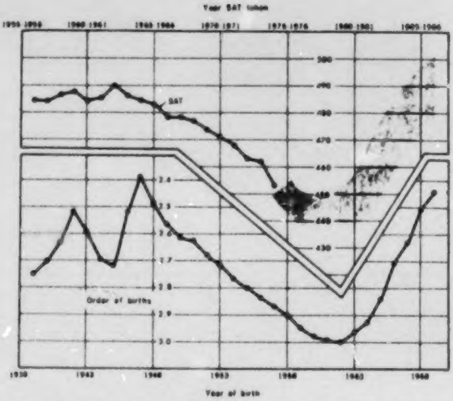


Fig. 6. Average order of live births in the United States, 1939 to 1969, and average SAT scores for the first 18 cohorts. Future SAT averages are predicted to lie within the shaded area.

Source: Zajanc (1976)

Figure 3

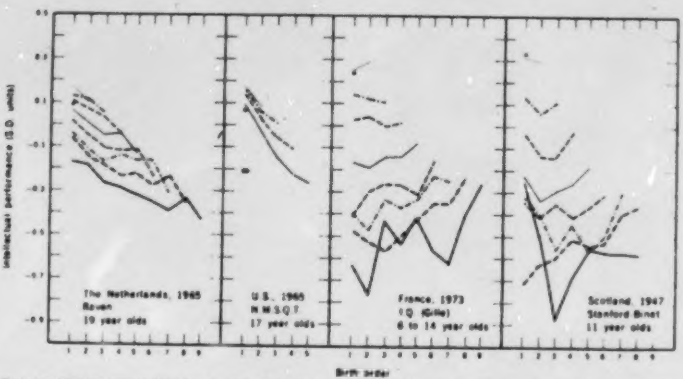


Fig. 1. Intellectual performance of four large populations, plotted as function of birth order and family size. Separate curves in each graph represent different family sizes, which can be read from the last birth order on each curve. Solid circles represent only children. The double open circle in the U.S. data represents twins. The years show when data were collected. The means of the Dutch, American, French, and Scottish data sets are 2.82, 102.5, 99.2, and 36.74 respectively. The corresponding standard deviations are 1.43, 21.25, 14.53, and 16.10.

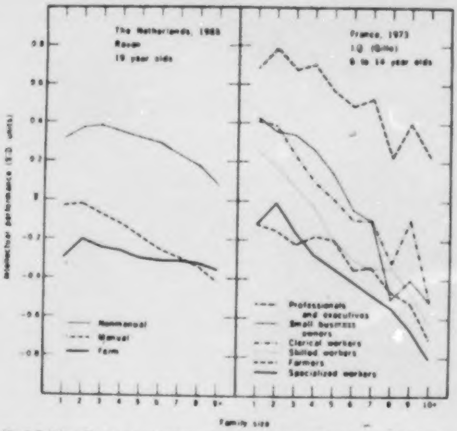


Fig. 2. Relation of family size and socioeconomic status to intellectual performance in the Netherlands and in France.

Source: Zajanc (1976)

Figure 4

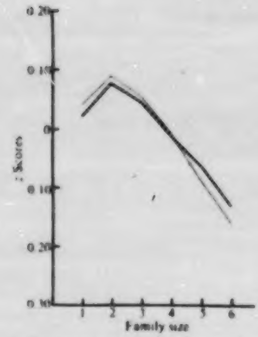


Fig. 1 Height (—) (cm) and intelligence (- - -) (Raven test score) by family size for the study population (n = 234,837).

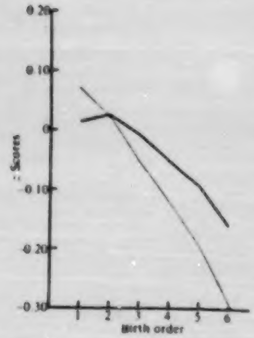


Fig. 2 Height (—) (cm) and intelligence (- - -) (Raven test score) by birth order for the study population (n = 234,837).

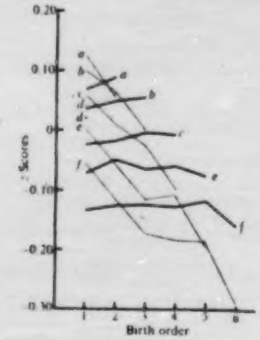


Fig. 3 Height (—) (cm) and intelligence (- - -) (Raven test score) by birth order within family size for the study population (n = 234,837). Family size: a, 2, b, 3, c, 4, d, 1, e, 5, f, 6.

Source: Belmont, et al (1975)

Table I

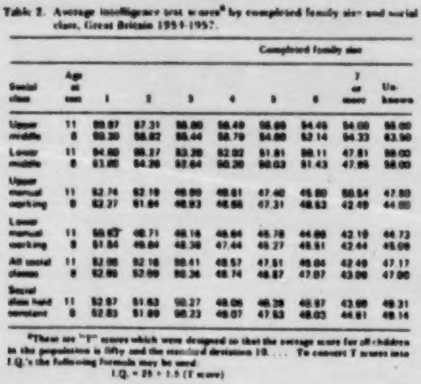


Table 2. Average intelligence test scores[a] by completed family size and social class, Great Britain 1951-1957.

		Completed family size							
Social class	Age at test	1	2	3	4	5	6	7 or more	Un-known
Upper middle	11	59.87	57.31	56.00	56.40	55.66	54.46	54.00	56.00
	8	59.20	56.82	55.44	55.79	54.00	52.14	54.33	53.90
Lower middle	11	54.60	55.27	53.20	52.02	51.81	50.11	47.81	50.00
	8	53.00	54.26	52.64	50.20	50.03	51.43	47.86	58.00
Upper manual working	11	52.76	52.19	49.00	49.61	47.40	45.80	50.84	47.80
	8	52.27	51.04	49.03	48.66	47.31	48.53	42.49	44.00
Lower manual working	11	50.67	48.71	48.16	46.64	46.78	44.80	42.10	44.73
	8	51.84	49.84	48.38	47.44	46.27	45.61	42.44	45.09
All social classes	11	52.06	52.16	50.41	48.57	47.51	45.04	42.40	47.17
	8	52.86	52.00	50.24	48.74	48.87	47.07	43.06	47.00
Social class held constant	11	52.87	51.63	50.27	48.06	46.29	46.97	43.88	49.31
	8	52.83	51.89	50.23	49.07	47.53	48.03	44.81	48.14

[a] These are "T" scores which were designed so that the average score for all children in the population is fifty and the standard deviation 10. . . . To convert T scores into I.Q.'s the following formula may be used:

$$I.Q. = 25 + 1.5\ (T\ score)$$

Source: Thomas (1972)

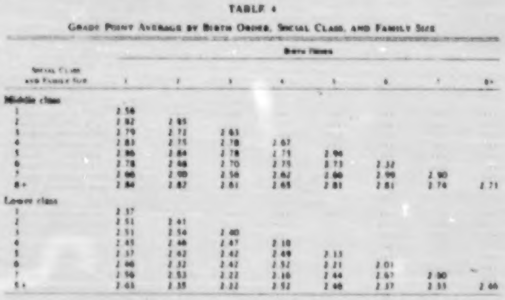


TABLE 4

GRADE POINT AVERAGE BY BIRTH ORDER, SOCIAL CLASS, AND FAMILY SIZE

	Birth Order							
Social Class and Family Size	1	2	3	4	5	6	7	8+
Middle class								
1	2.56							
2	2.82	2.85						
3	2.79	2.72	2.63					
4	2.83	2.75	2.78	2.67				
5	2.86	2.84	2.78	2.71	2.96			
6	2.78	2.68	2.70	2.75	2.73	2.32		
7	2.66	2.90	2.56	2.62	2.60	2.99	2.90	
8+	2.84	2.82	2.61	2.65	2.81	2.81	2.74	2.71
Lower class								
1	2.37							
2	2.51	2.41						
3	2.51	2.54	2.40					
4	2.45	2.46	2.47	2.10				
5	2.37	2.62	2.42	2.49	2.13			
6	2.00	2.32	2.42	2.52	2.21	2.01		
7	1.96	2.53	2.22	2.16	2.44	2.67	2.80	
8+	2.65	2.35	2.22	2.52	2.46	2.37	2.33	2.66

Source: Kunz and Peterson (1976)

Table II

Philippines

TABLE 5.D.1. STANDARDIZED IQ SCORES, BY RESIDENCE, SOCIAL STATUS, AND FAMILY SIZE *

Residence and social status	Standardized IQ scores of children in families of size:						Total No. tested
	1	2	3	4	5	6 and over	
Rural							
Middle	(107.40)	105.75	97.18	[illegible]	[illegible]	98.14	1067
Low	—	(74.30)	(95.80)	[illegible]	100.40	91.81	[illegible]
Total	(107.40)	100.21	97.19	[illegible]	[illegible]	[illegible]	[illegible]
Urban							
Middle	(107.05)	100.77	103.75	107.20	[illegible]	100.19	[illegible]
Low	(117.00)	[illegible]	(105.70)	[illegible]	[illegible]	[illegible]	191
Total	(105.80)	(100.33)	103.75	[illegible]	[illegible]	[illegible]	[illegible]
Both areas							
Middle	(120.00)	101.34	101.27	[illegible]	101.20	[illegible]	[illegible]
Low	(117.50)	[illegible]	100.70	97.34	97.20	[illegible]	[illegible]
Total	(115.07)	102.75	101.27	101.31	101.17	[illegible]	[illegible]

* Figures in parentheses refer to fewer than 20 children.

India

TABLE 5.A.1. STANDARDIZED IQ SCORES, BY CULTURE, SOCIAL STATUS, AND FAMILY SIZE *

Culture and social status	Standardized IQ scores of children in families of size:						Total No. tested
	1	2	3	4	5	6 and over	
Muslim							
Middle	(108.00)	102.27	[illegible]	97.28	100.19	[illegible]	[illegible]
Low	[illegible]	(100.00)	[illegible]	78.45	[illegible]	[illegible]	[illegible]
Total	(98.17)	102.16	[illegible]	[illegible]	101.11	[illegible]	[illegible]
Other Hindus							
Middle	(108.00)	94.91	98.16	100.42	102.87	102.13	[illegible]
Low	(110.40)	(92.81)	97.04	100.01	101.20	[illegible]	211
Total	104.27	94.19	[illegible]	[illegible]	102.31	101.46	[illegible]
Vellala							
Middle	(107.80)	102.75	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Low	[illegible]	108.19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total	103.78	104.11	[illegible]	[illegible]	95.14	[illegible]	[illegible]
All cultures *							
Middle	[illegible]	102.42	100.19	[illegible]	100.81	[illegible]	1701
Low	(98.27)	104.70	[illegible]	98.44	101.27	[illegible]	[illegible]
Total	102.77	101.31	[illegible]	98.41	101.31	[illegible]	2407

* Figures in parentheses refer to fewer than 20 children.
* Includes 197 children of the Scheduled Castes

Source: Omran and Standley (1976)

Table III

India

(a) By culture and parity

Culture	Mean ponderal index at parity: 0	1	2	3	4	5	6	7	8	9 and over	Total No. investigated
Muslim	12.9	12.6	13.1	12.6	12.9	12.9	13.1	12.9	12.8	12.8	1416
Scheduled Castes	13.3	12.9	13.1	12.5	12.3	13.1	12.9	12.2	(13.2)	(13.2)	575
Other Hindus	12.9	12.2	12.9	12.2	12.3	12.9	12.2	13.1	12.9	13.1	1270
Vellala	12.2	12.2	13.2	13.3	12.8	12.3	13.4	12.4	(13.1)	(12.7)	1043

(b) By culture and parity

Culture	Mean haemoglobin level (g/100 ml) at parity: 0	1	2	3	4	5	6	7	8	9 and over	Total No. investigated
Muslim	7.5	7.3	7.4	7.4	7.4	7.4	7.2	7.4	7.4	7.4	880
Scheduled Castes	6.9	7.9	7.0	7.0	7.0	6.9	7.2	(6.9)	(6.9)	(6.7)	349
Other Hindus	7.3	7.5	7.2	7.4	7.2	7.2	7.3	7.2	(7.1)	(7.1)	887
Vellala	7.6	7.4	7.2	7.2	7.2	7.3	7.1	(6.9)	(6.7)	7.0	717

Iran

(a) By culture and parity

Culture	Mean ponderal index at parity: 0	1	2	3	4	5	6	7	8	9 and over	Total No. investigated
Muslim	12.3	12.9	12.5	12.4	12.5	12.2	12.2	12.3	11.9	12.1	1899
Armenian	12.8	12.3	12.3	12.3	12.4	12.1	12.0	12.4	11.8	12.0	1151

(b) By culture and parity

Culture	Mean haemoglobin level (g/100 ml) at parity: 0	1	2	3	4	5	6	7	8	9 and over	Total No. investigated
Muslim	12.4	12.4	12.3	12.2	12.2	12.5	12.0	12.3	11.7	12.6	980
Armenian	12.2	12.3	12.1	12.3	12.6	12.2	12.0	11.9	12.2	12.1	1186

Source: Omran and Standley (1976)

REFERENCES

1. Belmont, L. and Marolla, F.A., (1973). Birth Order, Family Size, and Intelligence. *Science* 182:1096-1101.

2. Belmont, L., Stein, Z.A., and Susser, M.W., (1975). Comparison of Associations of Birth Order with Intelligence Test Score and Height. *Nature* 255:54-56.

3. Omran, A.R. and Standley, C.C. (eds.)(1976). Family Formation Patterns and Health. Geneva: World Health Organization.

4. Thomas, D.L. (1972). Family Size and Children's Characteristics. In: *Population, Resources and the Future*. Bahr, H.M., Chadwick, B. and Thomas, D.L., (eds.) pp. 137-157. Provo: Brigham Young University Press.

5. Zajonc, R.B. (1976). Family Configuration and Intelligence. *Science* 192:227-236.

Family Structure Changes and Child Care*

Testimony
Presented
by

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INTRODUCTION

The rearing of the next generation is of the greatest importance to society. Yet we do not know the long term ramifications of recent changes in the family. The most important short-term result of these changes is the increasing reliance of parents on alternative caretakers, "day care," for their preschool children. There are few parents who do not rely on baby-sitters, nursery schools, and kindergartens for the care and stimulation of their children during some of their waking hours during the first six years of life. In 1976, almost half of all children 3 to 5 were enrolled in nursery school or kindergarten (80 percent of the five year olds; 31 percent of the 3 to 4 year olds), compared with 30 percent in 1967 (65 percent and 14 percent respectively).[1] The proportion of infants and toddlers in day care is unknown.

We would probably not be as concerned about such alternative care except that a substantial number of preschool children are in such care for 20 or more hours a week. The most important of the recent changes in the family and the one that has been most often blamed for increased reliance on alternative care is the increasing entry into the labor force of the mothers of young children. We will therefore focus most of our attention on the children of working mothers, since this group is most in need of substantial alternative care. What is the magnitude of this phenomenon? What kind of care do different types of working mothers choose? Is there enough care? What will be the need for child care by 1990? What might alter the supply of day care or the needs of working mothers by 1990? Finally, what, if anything, should or could be done at the federal level?

PRESCHOOL CHILDREN OF WORKING MOTHERS: 1970 to 1990

Although, in the past, mothers with preschool children typically remained at home, in recent years labor force participation rates have been rising faster among mothers of young children than among any other group of women (from 20 percent in 1965 to 41 percent in 1977). Since 1965 the number of preschool children with working mothers has increased 65 percent, in spite of declining fertility. And, even though the fertility of individual women has been declining, the number of preschool children with working mothers is likely to continue to increase up to the year 1990. There are two reasons for this continued increase. First, in the 1980's the large baby boom cohort will be in their peak childbearing years. If these young women behave in a predictable fashion, and opinions of reputable demographers vary on this issue, we expect a 26 percent increase in the number of preschool children by 1990.[2] Since, at the same time, we expect the labor force participation rates of their mothers to continue to increase, again, barring unforseen events, the number of children of working mothers will increase for this reason as well.[3] We predict a 67 percent increase in the number of children of working mothers by 1990. In 1977 there were an estimated 18.5 million preschool children in the United States, of whom 6.2 million (34 percent) had working mothers. By 1990 there will be 24.1 million preschool children, 10.4 million (about 43 percent) with working mothers (Table 1).

DAY CARE IN THE 1970'S

Although the range of possible types of alternate care is enormous, in general, parents rely on in-home care and care by relatives. In 1965, nearly two-thirds of all preschool children of working mothers were cared for by a relative (Table 2). Of the other one-third, 15 percent were cared for in the child's home by a babysitter or housekeeper; 16 percent were cared for in the

Table 1

Estimates and Projections of Children with Mothers in the Labor Force, 1970-1990 a/ b/
(in thousands)

	1970	1975	1977	1980	1985	1990
Total Children Under 6	19,321	17,792	18,501	20,358	23,553	24,164
Children Under 6 with Mothers in the Labor Force	5,490	6,385	6,253	7,532	9,421	10,453
Percent of Children Under 6 with Mothers in the Labor Force	28.4	33.8	37.4	37.0	40.0	43.2

a/ Sources: "Children of Working Mothers," Special Labor Force Reports #134, 154, 165, 174
"Summary of Special Labor Force Report, March 1975
"Almost Half of All Children Have Mothers in the Labor Force," Monthly Labor Review, June 1977
Tables from the Bureau of Labor Statistics on children with working mothers, Monthly Labor Review, forthcoming.
"Projections of the Population of the United States: 1975 to 2050." Current Population Reports, Series, P-25, No. 601, October 1975.

b/ Preliminary projections of the number of children under 6 with mothers in the labor force by Ralph Smith, The Urban Institute.

Table 2

Day Care Arrangements: Number of Preschool (<6) Children with Mothers in the Labor Force by Type of Arrangement and Year, Past and Projected a/ (in thousands)

Type of Arrangement	(Proportion in 1965) b/	1965	1970	1975	1977	1980	1985	1990
Total <6 with mothers in the labor force		3794	5590	6423	6253	7532	9421	10453
Mother, Father Older Sibling	(.32)	1227	1789	2055	2001	2410	3015	3345
Mother/father	(.30)	1146	1677	1927	1876	2260	2826	3136
Older sibling	(.02)	81	112	128	125	150	189	209
Other Relative	(.30)	1146	1677	1927	1876	2260	2826	3136
Child's home	(.15)	582	838	963	938	1130	1413	1568
Other's home	(.15)	564	838	963	938	1130	1413	1568
Non-Relative	(.31)	1180	1733	1991	1938	2335	2921	3240
Child's home	(.15)	580	839	963	938	1130	1413	1568
Other's home	(.16)	600	894	1028	1000	1205	1508	1672
Day Care Center	(.055)	212	307	353	344	414	518	575
Cares for Self	(.005)	18	28	32	31	38	47	52
Other	(.01)	38	56	64	63	75	94	105

a/ Projections from Table 1

b/ Low and Spindler, 1968: Tables A-2 and A-4; mother worked 27 weeks or more, full- or part-time, in 1964.

home of a sitter or day care home operator. Only 5.5 percent were cared for in a group care center. The age of the child is a factor in choice of care. Slightly fewer of the children under 3 (3.9 percent) and slightly more of the 3 to 5 year olds (6.9 percent) were cared for in group care centers.[4]

More recent data on the 3 to 5 year olds show that things have not changed much over the decade.[5] If anything, preference for in-home care by relatives has increased. Three-quarters of the 3 to 5 year olds with mothers in the labor force were cared for by a relative, 20 percent by a non-relative.[6] Only 3.8 percent were cared for in day care centers.

Fewer than 10 percent of those householdr with a young child under 6 who used day care did not pay for it at all. The dollar cost of day care to parents, according to information available from several studies, is surprisingly low--$.30 to .70 per child per hour.[7] However, payments are not necessarily in cash. Thirty-six percent of those who paid reported that they paid in cash, another thirty-six percent paid in kind, and twenty-five percent reported that they paid both in cash and in kind.[8]

Type of Family and Choice of Day Care Arrangement

Although we do not know much about the actual process of choosing day care, we are gradually learning what factors parents consider most important and what types of parents choose each of the different kinds of care for their children.

Several studies have confirmed that there is substantial agreement among parents in the ordering of criteria used to select day care: 1) the suitability of the provider, 2) the convenience of the hours, 3) the location of the care, 4) the cost of the care, and 5) the type of program.[9] The age of the child is most important in evaluating the suitability of the provider. Parents are much more likely to consider day care centers for their 3 to 5 year old children than for infants and toddlers. This is partially because such care is less available for the under 3 group; however, parents believe that care in their own home or that of a provider is better suited to the younger child. Parents of school age children are also unlikely to use center care, since presumably, the children are in school most of the day. Preferences for daytime care do not seem to differ greatly among parents with children of similar ages. What differs most is the availability of different kinds of care. Different types of families have different options.

Income is one determinant of the availability of care. Although higher income families and families in which the wife makes a good wage are likely to spend more money for day care, income does not predict type of care directly. Children of both low and high income parents are more likely to be in day care centers than children of middle income parents. This is probably a result of the subsidization of care through social service agencies. As a result, low income children are more likely to be in public and private non-profit day care centers; upper income children are more likely to be in private for-profit centers or nursery schools. However, low income families are just as likely to rely on non-paid help from relatives and friends, and high-income families to hire babysitters and housekeepers to care for their children at home while they are working as to use centers. Similarly, the level of education of the mother has been found to affect expenditures on care, but not type of care chosen.[10]

Different types of care are differentially available, depending on a family's geographical residence. There is wide variation from state to state and between urban and rural areas in the ratio of centers to number of preschool children, according to our calculations. There is evidence that the availability of centers does have an impact on choice of care: parents are more likely to report reliance on centers in areas of greater supply (e.g., urban areas).[11]

However, family structure is the single most important differentiator of choice of day care by working mothers. For example, children of single parents are twice as likely to be in day care centers as children with two parents.[12] The most important reason may be that single-parent families are more likely to be poor and therefore eligible to receive subsidies for child care.[13] However, other explanations are possible. Besides who heads the family, the composition of the family is important. Does a nonworking adult live in the household, or an adolescent child? Families in which there is a grandparent, a disabled or unemployed adult, or a teenage child as well as a preschool child, are more likely to rely on in-home care by a relative than are families with no such person. Single parents may be less likely to live in large extended families or to have teenage children and may therefore find it both more acceptable and more necessary to place their child in centers. Given the strength of values strongly supporting the family's prerogative to care for its children without interference, a husband-wife family may find it more acceptable to use a sitter or relative than to relinquish care of the child to professional caretakers in a center.

Small families are more likely than large families to use day care centers.[14] The expense of center care may make it prohibitive for large families; in-home baby sitting has been estimated to be equivalent in cost to out-of-home care if there are three or more children.

Finally, whether relatives and friends live near-by and can be counted on to help with child care is important in choice of care. Families that have recently moved have been found to be more likely to rely on center care than geographically stable families.[15] Small families and those with professional heads and wives are more likely to be geographically mobile, to be living far from relatives and friends, and therefore, to use centers. Such families are also more likely to be found in urban areas.

Thus, after considering the effects of family structure and composition, including sex of head, number and ages of children, and presence of other adults, it should be no surprise that race adds no predictive power to day care choice.[16] Thus if black children appear to use centers more than white children, it is because black children are more likely to be living with only one parent and to be poor than are white children.

Of course, day care choice is also strongly dependent on the mother's work schedule, whether she works part-or full-time. Mothers working part-time are more likely to report that they split child care with their spouses or that they care for the child while at work, and they report more reliance on informal types of care.[17] Full-time workers, on the other hand, depend more on formal care, whether in family day care homes or in day care centers. Their young children are less likely to be reported as caring for themselves or as being in the care of older siblings.[18] Since employed female household heads are more likely to be working full-time than employed wives, this further emphasizes the importance of family structure-conditioned availability as the primary determinant of day care choice.[19]

How Adequate is Day Care in the 1970's?

Some 18,000 preschoolers were reported as caring for themselves in 1965. Although this is an alarming number, it represents less than 1 percent of all children of working parents. The fact that nearly all parents can locate alternate care has led some people to conclude that the supply of day care services is adequate, despite the rapid influx of mothers into the labor force. Yet even if parents are able to arrange some kind of care, this does not mean that they are satisfied with the care or that the quality is adequate. Parental dissatisfaction, poor care, crowded facilities, and inflated prices could all reflect an inadequate supply.

Parental satisfaction.— In general, parents seem to be satisfied. In one recent study, fewer than 10 percent of all parents surveyed reported themselves to be either less than completely satisfied or to be dissatisfied with their current day care arrangements.[20] On the other hand, the same study reported that about one-quarter of parents would like to change to another form of care. Almost half of these desired to switch to center or nursery school care. Since the age of the children is not reported, it may be that such results reflect the changing ages of children rather than widespread disaffection with in-home care. On the other hand they might indicate that parents are satisfied with the care they are using because they have no alternatives. Parental satisfaction may not reflect their true difficulties in obtaining care for their children.

Quality.-- Parents are concerned about the quality of care their children receive. Of those changing from one type of care to another, the largest number of parents in one study reported that the provider was not suitable, for reasons they defined to be not liking the provider or facilities, not being able to find a reliable provider, a program going out of existence, or a provider no longer available.[21] Yet, in selecting another form of care, child-oriented factors such as the warmth of the care, the supervision, and the quality of the staff as well as whether the child likes the type of care were more important. The educational component itself was of minimal importance to parents. In the only major effort to evaluate the quality of care in centers and day care homes, whether or not an educational program was offered was one of the criteria indicating the quality of the home or center.[22] Since many centers do not profess to offer an educational program, and parents do not necessarily want such a program,[23] the investigator's definition of quality may not be appropriate. Although the researchers considered the quality of care found in this study to be shockingly low, the question of the quality of care remains to be resolved. Further investigators need to separate out the various components of care quality.

Supply of Facilities and Providers.--In 1975 there were approximately 27,400 licensed day care centers in the United States, with an enrollment of 900,000 preschool children (Table 3). There were approximately 95,000 licensed and approved family day care homes, with an enrollment of some 150,000 preschool children.[24] Assuming that all day care centers and about 10 percent of day care homes are licensed or approved, we estimate that in 1975 there were a total of 27,400 day care centers and some 950,000 licensed and unlicensed day care homes in the United States.[25] Together these centers and homes had an enrollment of about 2.4 million preschool children. Different estimates based on parental reports (Table 4) indicate that a total of 2.3 million children were cared for outside the child's home: 1.3 million children were in licensed or unlicensed day care homes and centers and 1.0 million were cared for in the home of a relative. The rest of the 4.3 million pre-schoolers who are not cared for by their parents (2.0 million) we estimated as cared for in the child's home by a relative or babysitter.

Very little is known about day care providers, especially those who operate in their own homes and those who are unlicensed. Although there are data available on day care center workers, such workers comprise a relatively small proportion of the total. In 1975, for example, of the estimated 2.5 million total caretakers (other than parents) only 59,000, less than 3 percent, worked in day care centers (Table 4). An additional 95,000 were licensed day care home providers. These providers pay taxes and appear in labor force statistics; however, together they constituted only 7 percent of all caretakers in 1975. The remaining 93 percent, a total of 2.35 million persons, were working as day care providers but are not typically counted as part of the labor force. These (unrecognized) 2.35 million workers, primarily women, amounted to about 6 percent of the total (recognized) 1975 female labor force of 37 million women.

Thus there is a substantial group of women providing a service that is not included in the Gross National Product. Such providers have been found to

TABLE 3

Estimated Supply of Day Care Centers and Homes in 1975

	Facilities[a]	Spaces[a]	Estimated Full-Day Pre-School Enrollment[b]
Day Care Homes			
Unlicensed	(855,000)[c]	(3.285.000)[c]	(1,350,000)
Licensed	95,000	365,000	150,000
Day Care Centers	27,400	1,190,000	900,000

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[a] U.S. Department of Health, Education and Welfare, March 1976. Estimate for entire U.S. extrapolated from data reported by 35 states.

[b] Assuming 1.6 preschool children per day care home, and 33 pre-school children per day care center.

[c] Assuming 10 percent of day care homes are licensed.

Table 4

Preschool Children of Mothers in the Labor Force in Need of Day Care, Numbers of Caretakers and Facilities Needed, 1975 and 1990
(in thousands)

Day Care Arrangement	1975 No. Children[a]	1975 No. Caretakers[b]	1975 No. Facilities[c]	1990 No. Children[a]	1990 No. Caretakers[b]	1990 No. Facilities[c]
Not in need of Care						
In care of parent or sibling	2055	—	—	3345	—	—
In need of Care						
Non-Center Care	3917	2448	2448	6376	3985	3985
Other Relative:						
Child's home	963	602	602	1568	980	980
Other's home	963	602	602	1568	980	980
Non-Relative:						
Child's home	963	602	602	1568	980	980
Day Care home	1028	642	642	1672	1045	1045
Day Care Center	353	59	11	575	96	17.4
Total	4,270	2507.	2459	6951	4081	4002

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[a] From Table 2.

[b] At 1.6 preschool children per caretaker in non-center care and 6 preschool children per caretaker in day care centers.

[c] At 1.6 preschool children per home and 33 preschool children per day care center.

make a very low profit; they have been said to be subsidizing working mothers by providing low cost care at little benefit to themselves.[26] Yet the availability of such care has been absolutely essential, enabling mothers of young children to enter the labor force. Factors that have kept these women from entering the labor force, and those that may affect the future availability of providers are important questions that we will touch on at a later point.

At the present time we don't know enough about day care providers to evaluate existing day care needs. As far as the supply of centers, the evidence is contradictory. The supply of centers has expanded greatly over the past decade. Between 1970 and 1975 the number of spaces doubled while the number of preschool children of working mothers increased by only about 15 percent.[27] Although almost half of all day care centers maintain waiting lists, large numbers of unfilled spaces are reported and several studies have found that, in general, centers operate at about 80 to 85 percent of capacity.[28] Costs of care to parents appear to have just kept pace with inflation. The evidence is even less clear for day care homes. The number of licensed day care homes also more than doubled between 1970 and 1975; whether this increase resulted from new entries or from the licensing of existing arrangements is not known.

Up to this time it has been easy to become a day care provider, particularly since licensing requirements were not enforced. Moreover, licensing regulations have not been difficult to meet and there has typically been only a very short delay between application and receipt of a license. Since there are few advantages to large-scale operations, a homemaker with children of her own can operate out of her home as or more efficiently than a larger, more formal center. Yet requirements for federal funding have become more stringent and more complex; licensing regulations have become harder to meet and are more strictly enforced;

and more and more time is spent in filling out forms. Thus in-home providers may find their position steadily less attractive.

Summary

The evaluation of day care remains problemmatic. As highly publicized as it is, center care constitutes but a small part of the day-time care of children. Most children are cared for in informal arrangements, which are generally satisfactory to parents, at least while their children are young. Yet the system of informal care can be characterized as fragile. The majority of providers are not, at present, licensed; most are not affected by income tax or social security, let alone licensing requirements and regulations. Trends point toward interference in this system, first, by increasing requirements for entry as a day care provider and by increased pressure to license and control, and second, by increasing competition from wages and salaries in the formal labor market. The continued movement of women into the labor force is likely to increase the need for care and simultaneously decrease the pool of providers of low-cost, at-home care. What then are the prospects for the next decade?

DAY CARE OVER THE NEXT DECADE, 1980-1990

Assuming that the preferences of parents stay about the same, we estimate that the number of preschool children (with mothers in the labor force) cared for in day care centers and nursery schools will increase by 2/3, from 344,000 in 1977 to 575,000 in 1990 (Table 2). In line with current preferences, the largest proportion of preschool children, some 6.5 million, will still be cared for by their parents, an older sibling, or by another person in the child's home. In Table 4 the numbers of caretakers and facilities that will be needed to care for these children are estimated. By 1990 some 17,400 day care centers and some 1 million family day care homes will be needed to care for 2.2 million preschool children whose parents prefer such care. Estimates indicated that in 1975 there were some 27,000 day care centers available, more than needed in 1990.[29] This excess of supply over demand is not the case with family day care. We estimated that in 1975 there were 95,000 licensed family day care homes. However, there may be as many as 950,000 licensed and unlicensed family day care homes. An estimated 1 million more homes (non-relative and relative-operated) will be needed by 1990.

Not only will a large number of facilities be required, but the total number of caretakers needed will be substantial. The present structure of care is such that 2.4 million caretakers (other than parents) care for an average of 1.6 children (not including their own) each; 59,000 day care center workers look after 6 children each. By 1990 a total of 4 million non-parent caretakers will be needed to care for 6.9 million preschool children of working mothers, 60 percent more than presently providing such care. If conditions do not change, in the future we can expect underutilized day care centers and, perhaps, crowded care homes and desperate parents.

However, it is not likely that conditions will stay the same over the next decade. To develop these projections we had to assume that parents' preferences for the care of their children would not change. We did not take into consideration changing costs of care, shortages of different types of care, or changes in public policy. Although we don't know exactly what changes will occur, we can examine the trends. Based on an understanding of the factors influencing parents' decisions as to the care of their children, we can then speculate as to the effects such changes will have on preferences in the next decade. In the same way we can estimate the impact such changes will have on the supply of care by providers.

Many of these changes will affect demand and supply by changing the relative availability and price of care. An increase in the wages or benefits of day care providers increases the cost of day care. Parents can then be expected to substitute less expensive forms of care. On the other hand, if the wages of working mothers increase, they may be more likely to use more expensive modes of care. Since both changes are likely to occur, the relative wages of mothers and caretakers will be crucial not just to the choice of care, but to the decision of whether to work or stay home.

In deciding whether or not to take in others' children, caretakers will weigh the benefits of caring for children against those of entering the formal labor force and against caring only for their own children. We have discussed the low wages of day care providers; however, if these wages rise above the level mothers are currently willing or able to pay, mothers are likely to remain out of the labor force, unless they can afford to pay for the privilege of working. Professional women, for example, may continue working even if child care expenditures eat up much of their take-home pay, if they enjoy their profession or if they believe that remaining in the labor force will enable them to maintain their seniority, keep up with the field, and so increase their future earnings. However, this may not be a viable option for many. Labor force participation is the most important factor, therefore, in determining both demand for and supply of care. What other sorts of factors are likely to affect either the demand for different types of care or the availability of such care over the next decade? The most important of these are demographic changes.

Demographic Changes

Fertility and family structure are the main demographic factors affecting the demand for day care. Female-headed families and small families are more likely to use licensed centers and homes than are two-parent and large extended families. There has been an enormous increase in the number of families headed by one parent (usually the mother) in the last decade.[30] As a result, the proportion of children living with both parents has also declined. In 1968, for example, 87 percent of all children under 6 were living with both natural parents (Table 5). By 1977 that percent had dropped to 81.[31] These figures mask enormous race differences. Fewer than half (44 percent) of all black preschool children were living with both natural parents in 1977, compared with 87 percent of white preschoolers.[32] Most of these children were living with their mothers. In 1977, 15 percent of all preschool children were in female-headed families, 10 percent of whites, 41 percent of blacks. Fewer than 1 percent were in single male-headed families. There has also been an increase in the proportion of preschool children living in families, but with neither parent. The proportion of such white children increased 36 percent from 1.1 in 1968 to 1.5 in 1977, that of black children increased 12 percent from 12.1 to 13.5 percent. Although a large proportion are probably living with other relatives, a substantial number may be in foster or adoptive homes.

Ross and Sawhill documented the growth of families headed by women.[33] They found most of this increase due to divorce and separation, with a small part due to out-of-wedlock childbearing. Recent data indicate a stabilizing of the divorce rate; for the first time in a decade the increase has stopped. Whether this is only temporary, and whether the divorce rate will increase or decline is unknown. At the present time, one-third of all marriages are expected to end in divorce, and from one-third to one-half of all children born in the 70's are expected to spend at least a few years in a female-headed family before they reach 18.[34] However, children in female-headed families, as in other families, are most in need of day care if the mother works outside the home. In 1977 about the same proportion of the preschool children of working and non-working mothers were in female-headed families, 15 percent.[35] Therefore, factors affecting the growth in families headed by women should affect

Table 5

Family Relationship and Presence of Parents, Children Under 6, by race, 1968 and 1977 [a]

	1968		1977	
All Races	Number	Percent	Number	Percent
Total	22,932	100.0	18,620	100.00
In families	22,809	99.5	18,509	99.4
Living with both parents	19,918	86.8	15,018	80.6
Living with mother only	2,138	9.3	2,745	14.7
Living with father only	109	0.5	128	0.6
Living with neither parent	645	2.8	619	3.3
Not in families	123	0.5	111	0.6
White				
Total	19,129	100.00	15,332	100.00
In families	19,050	99.6	15,263	99.5
Living with both parents	17,591	91.9	13,388	87.0
Living with mother only	1,178	6.2	1,546	10.1
Living with father only	67	0.3	102	0.7
Living with neither parent	213	1.1	226	1.5
Not in families	79	0.4	69	0.4
Black				
Total	3,487	100.0	2,845	100.0
In families	3,450	98.9	2,809	98.7
Living with both parents	2,069	59.3	1,237	43.5
Living with mother only	916	26.3	1,162	40.8
Living with father only	42	1.2	26	0.9
Living with neither parent	424	12.1	385	13.5
Not in families	37	1.1	36	1.3

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[a] U. S. Bureau of the Census, "Marital status and family status," March 1968, Current Population Reports, Series P-20, No. 187, 1969; U. S. Bureau of the Census, "Marital status and living arrangements: March 1977," Current Population Reports, Series P-20, No. 323, 1978.

the growth in the number of preschool children of employed female family heads. If the divorce rate continues to increase, or at least fails to decline, the demand for centers and licensed homes should continue to increase as single parent families are more likely to use such care for their young children.

The other source of growth in female-headed families is that of out-of wedlock births. Out of wedlock births are only a small proportion of total births: 15 percent in 1976. In addition, most mothers eventually marry. However, they do constitute a problem when the mother is young (half of all out-of-wedlock births are to teenagers) and poor (46 percent of the families receiving AFDC in 1973 contained at least one out-of-wedlock child).[36] Although never-married mothers with young children are an important group, they are less so with respect to child care, because they are less likely to be working.[37]

There has also been a trend toward smaller families. Census Bureau projections are based on the assumption that current cohorts will have an average of 2.1 children per family by the time they finish their childbearing.[38] A larger proportion of families will have one or two children; a much smaller proportion of families will have three or more children. If, in addition, their children are more closely spaced, it is unlikely that both preschool and adolescent children will be present at the same time; the likelihood of using in-home care is reduced even further. Since parents can better afford tuition or fees if they have only one or two children, we might expect an increase in the use of centers and licensed homes to result from declining family sizes. Families are also small because they are less and less likely to consist of more than parent and child generations. In 1969, for example, about 89 percent of all families with their own children were of the nuclear type. Less than 7 percent consisted of 3 or more generations.[39] The increasing popularity of separate residences for the elderly removes a traditional source of child care for mothers, and greater mobility distances them from kin, even as neighbors. Continued trends towards nuclear family structure, first manifested in the tendency for female family heads to establish their own households after disruption, and continuing with the increased tendency of single youth and the elderly to head their own households, will probably result in greater reliance on center and out-of-home care.

Geographical mobility is another factor. Half of the population moves every 5 years. Parents tend to be less mobile while their children are in school than when they have either very young or grown children. Any increase in that mobility would increase the demand for center care.

Demographic changes are likely to affect the supply of caretakers of certain ages at the same time that they affect the number of school-age children in need of care and parental preferences as to the type of care. As birth rates decline, the proportion of elderly persons increases relative to younger age groups. The increased number of senior citizens coupled with the increased participation of young women in the labor force, may result in a shift toward older caretakers both as in-home providers and as day care center workers (not necessarily for their own grandchildren). Of course, the large number of young women and men in their twenties and thirties available for employment may make it harder to get a job, which may increase the attractiveness of being an in-home day care provider. In addition, the decreased number of preschool children has made it difficult for teachers to find work, a situation that is expected to become worse, not better.[40] The surplus of trained and certified teachers may be increasingly funneled into day care, or into "preschool education." Certification levels for day care providers are continually upgraded, and some states are already providing a half day of formal schooling for four-year olds (Maryland, for example).

Thus, we can see that it is unlikely that demographic changes of the type we have described will occur without concomitant changes of other types. Specifically, we will briefly discuss the offsetting or multiplying effects of changes in employment conditions, changes in attitudes, and, finally, changes in public policy.

Changes in Employment Conditions

Changes in the structure of work have been slow in developing, but would have substantial impact on the demand for day care. Mothers working part-time are much less likely to use day care centers. Increased flexibility of work hours (flexitime) and increased access to part-time employment would allow parents in two-earner families to share child care. It would also facilitate cooperative day care arrangements among neighbors, friends, and relatives.

The impact that flexible scheduling of work hours would have on the use of day care by two-parent families is dependent on the willingness of fathers to share in child care. There is some evidence that fathers do share the care of their children with their wives. In 1965 almost half the children of working mothers who were cared for principally by a parent were cared for by the father while the mother was working.[41] In 1975, of the 3 to 6 year old children of full-time working mothers who were cared for by a parent, about one-sixth of the white children and about one-quarter of the black children were cared for by the father.[42] Dickinson found that in one-quarter of all two-parent families, the parents split the care of their children during work hours.[43]

Increased wages for women working outside the home would encourage some women to move out of marginal employment as home day care providers. In addition, creation of part-time and flexitime job opportunities or provision of day care at the work place may encourage more women to work outside their homes rather than to provide in-home care for other people's children. Increased employment opportunities would also serve as an incentive to switch from informal to formal sectors. In Sweden, for example, good job opportunities and wages have made it more desirable for women to move into the labor force and pay for day care than to work as in-home day care providers outside the formal labor force. However, women in Sweden have been encouraged to work. Socialism may both encourage working and collective day care and discourage even the wealthy from hiring housekeepers.

Changes in Attitudes

This suggests that one of the most important of all changes is attitudinal. Changes in attitudes regarding the desirability of center care for young children, the father's role in childrearing,and the relative roles the family and other institutions should take in the rearing of the young can be expected to affect the demand for formal versus informal care. Such change has been very slow, however. Demographic changes might play a role in changing attitudes. As female family heads and women with fewer children become more numerous, their views (presumably favoring formal day care modes) will become more influential.

Along with changes in economic incentives and disincentives for women to select various occupations, attitudes regarding the appropriate caretakers for children and the appropriate roles for women may affect providers. Working in another's home, for example, may be seen as demeaning, whereas working in a formal day care center at competitive wages may be perfectly acceptable. Such attitude changes would reduce the supply of such types of care as babysitters, housekeepers, and maids. A logical result might be the professionalization of child-caretakers, and concomitant increases in their wages and salaries.

Changes in Public Policy

Direct federal expenditures on child care amounted to some $2.5 billion in fiscal year 1977. However, besides direct expenditures, public policies affect demand and supply in other ways.

Numerous policies can affect demand. Those which lower the cost and raise the quality of formal care, or which raise women's wages, are likely to increase the use of formal care. Welfare policies that require women to work or that provide benefits below minimum living standards will force women to work and increase the need for day care. On the other hand, policies which promote flexible scheduling of work and extended pregnancy or parental leave for men and women may decrease the demand for formal modes of care. Besides direct regulations and requirements, such as for the receipt of welfare or food stamps, various government policies can encourage mothers of young children to enter or stay out of the labor force. Policies that provide a public service job to the male head in two-parent families (as in proposed welfare reform legislation) or that offer generous maternal work leave while children are young (as in some European countries) should reduce day care demand. Finally, tax policies that allow deductions for expenditures on certain types of day care and not others will increase the reliance on those types of care.

Federal funds serve as the principal source of support for research and evaluation. Decline in interest in (and funding for) early childhood educational programs coincided with the failure of various research efforts to find lasting benefits of Head Start.[44] Recent research that indicates considerable long-term benefits of early education may once again raise interest in such programs and increase demand by parents for such care.[45]

On the supply side, public funding has been very important in the development of the nonprofit day care center, and the subsidization of low income families continues to support such centers. The direction of future funding will be critical to the future supply of center care. The federal role in setting standards for facilities and staff also affects the cost and price of formal care, and the willingness and ability of providers to enter or remain in the field. Rigorous enforcement of licensing requirements may raise the price and lower the supply of the present low-cost care in day care homes as well.

Social security, income tax, and welfare rules can also affect the supply of in-home providers. Earnings limits for recipients of AFDC limit the amount of money such women might earn by babysitting or by providing home day care. Older individuals, who might serve as caretakers, are also restricted in earnings, up to a certain age. Such restrictions would discourage retirees from providing day care.

On the other hand, one of the advantages perceived by in-home day care providers is that evasion of taxes and social security payments is possible. As long as a person cares for only a few children and does not advertise, the chances that anyone will question his or her tax status are minimal. There may be no short-term economic advantage to working outside the home for many married women, especially if they must pay for child care and if the extra income brought into the household increases the family's total tax burden. In addition, given the structure of the present social security system, the benefits that most married women would accrue based on their own earnings outside the home are lower than those they receive as wives or widows, without any contribution to the system at all. Given recent legislation which will substantially increase the bite taken by social security taxes out of individual paychecks over the next several years, the benefits of formal labor force participation will decline even further. Thus, over time the advantages of staying out of the formal labor force may increase. One of the reasons for the lack of information about informal day care arrangements is the reluctance of providers to talk about their source of livelihood. Increased surveillance by the Internal Revenue Service and crackdown on small-income recipients, though unlikely, would greatly decrease the supply of low-cost day care arrangements.

Summary

The demand for day care depends largely on women's labor force participation, as well as on their fertility. Given current trends, the number of preschool children of working mothers is expected to increase by 67 percent by 1990, while the number of preschool children is expected to increase by 45 percent. Whether there will be enough adequate care for the children of working mothers depends on the demand for and supply of different types of care. The structure of the family is an important determinant of choice of care. Is it a two-parent or a single parent family headed by a woman? Is there a non-working adult or an adolescent child? All the preschool children of working mothers need daytime care; however, the two-parent working couple probably has more available options than does the single working parent, and, as a result, is less likely to use day care centers. In addition, the working female family head is more likely to be poor, and her children to be in subsidized care. Therefore, any future increases in female headship should result in increased demand for center care. However, since it is this group of women whose care is most sensitive to federal and state policies, projection of future need based on current trends is highly speculative. Finally, the availability and cost of day care will also be influenced by employment policies, welfare and social security policies, and federal regulation.

DAY CARE POLICY

Although there are other reasons why mothers might want or need day care for their preschool children, it remains an issue of primary importance for working mothers. Part-time work and flexible scheduling of hours will help married mothers resolve the child care dilemma; however, many will still need to rely primarily on day care, as must single mothers. The goal of concerned policy-makers should be to facilitate the maximum of choice and quality with the minimum of cost and red tape.

It is important to note that there is no typical parent or typical child at any age. Needs and preferences of children and parents differ from family to family. Some parents use day care primarily as a means of supervision and care while they are working. Others view day care as educational or developmental; many non-working mothers send their children to nursery schools for this reason. Rather than regulating all care as though it were developmental, it might be desirable, for example, to establish minimum standards for various types of care. Aided by a publicly supported information and referral service, parents would then be free to select the type they prefer.

Whether all care should be regulated is a difficult question, and certainly there is no immediate threat of investigation to the millions of unlicensed babysitters and caretakers. More attention might be profitably paid to educating parents as to what constitutes high quality care and how to distinguish it from poor quality care. Finally, more attention might be paid to the dilemma of mothers who wish to work, who can make enough so that they do not qualify for welfare, but for whom working minus child care does not leave them a decent living.

European employment and family policies appear to be more closely integrated than are those of the United States. Although some feared that increased benefits to working mothers, such as paternity and child care leave, would be pro-natalist, increased fertility has not, in fact, been the result. Work and family life may only be inimical because policy makers have not taken into consideration the family involvements of both men and women, seeing instead the one-dimensional worker.

THE FUTURE

We have reviewed the prospects for day care of children of working mothers over the next decade, given current trends and policies. Whether there is or is not a shortage at present, and whether or not there will be one in the future is debatable at the present time. There is simply not enough information available on parental needs or on the availability of different types of care.

However, there may be a shortage of care provided in homes for the 6.3 million children of the working mothers who prefer such care, and this would mean that more day care centers would be needed. If labor market opportunities become more attractive it is likely that fewer women will be willing to remain in what has been found to be a rather poorly paid profession[46] except while they themselves have small children. The supply of such caretakers may be even more critically affected if a greater attempt is made to incorporate all child care providers under a single set of standards and into the market economy/formal labor force. Thus, depending on the demand for women in the labor force, the market wage, and enforcement of current laws and regulations, women may or may not find it profitable to provide low-cost child care for even a certain period of their lives.

An alternative scenario might show increased day care provided by senior citizens, and increased reliance on cooperative arrangements and sharing of child care by fathers. However, unless there is a reversal in the trend toward entry into the labor force of mothers of young children, some increase in the need for center care over the next decade appears inevitable. Even assuming increased availability of part-time work and jobs with flexible schedules, the demand for center care will probably increase because of an increased number of single parents and small and highly mobile families, and because of the rising cost of in-home care.

The future of day care over the next decade depends on demographic, socioeconomic, ideological, and attitudinal trends and on government policy. Current policies are inconsistent in that they overtly promote the use of licensed day care homes and centers yet make it increasingly unprofitable for providers and increasingly costly for parents. Nor do they facilitate transitions between work and childrearing. Major re-evaluation of day care goals and policies is likely to take place over the next decade. Such re-examination will be fueled by short term increases in preschool populations, expectations of long run decreases, and some recently published studies that show some very long range positive results for children of early childhood education. In any case, important efforts will be directed toward evaluating, first, the goals and outcomes of day care and family policies and, second, the impact on the family and day care of policies in other areas, such as revenue, employment, population, and welfare. Increasing the ante is not a justifiable strategy when uncertain about the value of the cards in hand.

Reference Notes

1. U. S. Bureau of the Census, "Nursery school and kindergarten enrollment of children and labor force status of their mothers: October 1967 to October 1976." *Current Population Reports*, Series P-20, No. 318, 1978.

2. See U. S. Bureau of the Census, "Projections of the Population of the United States: 1975 to 2050." *Current Population Reports*, Series P-25, No. 601, 1975,Series II projections.

3. Preliminary projections by Ralph Smith, Program of Research on Women and Family Policy, The Urban Institute, 1978.

4. Seth Low and Pearl Spindler, *Child care arrangements of working mothers in the United States*, U. S. Department of Labor: The Women's Bureau, 1968.

5. Although a number of other surveys have been conducted between 1965 and 1975, none distributes type of care by children; rather, each focuses on families or parents. Therefore, none is directly comparable.

6. 56 percent are cared for by a parent, 6 percent by another relative in the child's home, 12 percent by another relative in the home of the caretaker. 3 percent are cared for by a non-relative in the child's home, 16 percent are cared for by a non-relative in the caretaker's home. U. S. Bureau of the Census, "Daytime care of children: October 1974 and February 1975." *Current Population Reports*, Series P-20. No. 298, 1976.

7. Low and Spindler, *op.cit.*; Arden Hall and Samuel Weiner, *The supply of day care services in Denver and Seattle*, Research Memorandum 33, Stanford Research Institute: Center for the Study of Welfare Policy, 1977; Unco, Inc., *National Consumer Study*: 1975, 4 volumes; Westat Research, Inc., *Day Care Survey 1970*, Westinghouse Learning Corporation, 1971.

8. "In kind" payment includes services or favors (Unco, *op.cit*.). It may, therefore, include cooperative arrangement

9. Low and Spindler, *op.cit*.; Unco, *op. cit*.

10. Katherine Dickenson, "Child Care," pp. 221-234 in Duncan and Morgan (eds), *Five Thousand Families*, vol. III, The University of Michigan: Institute for Social Research, 1975; Judith Lave and Shirley Angrist, "Child care arrangements of working mothers; Social and economic aspects," *International Journal of Sociology of the Family* 5(Autumn): 230-242, 1975; Unco, Inc., *op.cit*.

11. Greg Duncan and C. Russell Hill, "Model choice in child care arrangements," pp. 235-258 in Duncan and Morgan (eds) *Five Thousand Families*, Vol. III, The University of Michigan: Institute for Social Research, 1975; Greg Duncan and C. Russell Hill, "The child care mode choice of working mothers," pp. 379-388 in Duncan and Morgan (eds.), *op.cit*., Vol. V, 1977.

12. U. S. Bureau of the Census, 1976, No. 298, *op. cit*.; Low and Spindler, *op. cit*.; Unco, *op. cit*.; Duncan and Hill, 1975, *op. cit*.; Richard L. Shortlidge, Jr., and Patricia Brito, "How women arrange for the care of their children while they work: A study of child care arrangements, costs, and preferences in 1971," Ohio State University; Center for Human Resource Research, 1977.

13. Heather Ross and Isabel Sawhill, *Time of Transition: The Growth of Families Headed by Women*, Washington, D.C.: The Urban Institute, 1975.

14. Duncan and Hill, 1975, *op. cit*.; Shortlidge and Brito, *op. cit*.

15. Duncan and Hill, 1977, *op. cit*.

16. Mordecai Kurz, Philip Robins, and Robert Spiegelman, *A study of the demand for child care by working mothers*, Stanford Research Institute: Center for the Study of Welfare Policy, Research Memorandum 27, 1975; Duncan and Hill, 1977, *op. cit*.

17. Low and Spindler, *op. cit*.; U. S. Bureau of the Census, 1976, No. 298, *op. cit*.

18. *Ibid*.

19. U. S. Department of Labor, *U. S. Working Women: A Databook*, Bureau of Labor Statistics, 1977, Table 20.

20. Unco, Inc., *op. cit*.

21. *Ibid*.

22. Mary Dublin Keyserling, *Windows on Day Care*, New York: National Council of Jewish Women, 1972.

23. Ellen Handler, "The expectations of day care parents," *Social Science Review* 47 (June): 266-277, 1973.

24. U. S. Department of Health, Education, and Welfare, "Children served by public welfare agencies and voluntary child welfare agencies and institutions," March 1975, National Center for Social Statistics, Publication No. (SRS) 76-03258, 1976.

25. Licensing of family day care homes is mandatory in only 38 states while center licensing is required in all states except Mississippi, where it is voluntary. In 1970 Westat (*op. cit*.) estimated that only 2 percent of day care homes were licensed. Hall and Weiner (*op. cit*.) found that 8 percent of the family day care homes in Denver and 33 percent of those in Seattle were licensed in 1976. The Department of Health, Education and Welfare assumed 5 percent licensing in its preliminary FIDCR report. 10 percent is a conservative estimate.

26. Hall and Weiner, *op. cit*.; Sheila Kamerman, and Alfred J. Kahn, "Explorations in family policy," *Social Work* 21 (May): 181-186, 1976.

27. U. S. Department of Health, Education, and Welfare, 1976, No. 76-03258, *op. cit*. Russell B. Long, (Chairman), *Child care--Data and Materials*, Committee on Finance, U. S. Senate, 1974.

28. Westat, *op. cit*.; Hall and Weiner, *op. cit*.

29. U. S. Department of Health, Education, and Welfare, 1976, No. 76-03258, *op. cit*.

30. U. S. Bureau of the Census, Marital status and family status, March 1968, *Current Population Reports*, Series P-20, No. 187, 1969; U. S. Bureau of the Census, Marital Status and living arrangements: March 1977, *Current Population Reports*, Series P-20, No. 323, 1978.

31. U. S. Bureau of the Census, 1978, No. 323, *op. cit*.

32. *Ibid*.

33. Ross and Sawhill, *op. cit*.

34. Paul C. Glick and Arthur J. Norton, "Marrying, Divorcing, and Living Together in the U. S. Today," *Population Bulletin*, 32(5), 1977; Mary Jo Bane, *American Families in the Twentieth Century*, New York: Basic Books, 1976.

35. U. S. Department of Labor, 1977, *op. cit*.; U. S. Bureau of the Census, "Characteristics of American children and youth: 1976," *Current Population Reports*, Series P-23, No. 66, 1978.

36. Kristin A. Moore and Steven B. Caldwell, "Out-of-Wedlock Pregnancy and Childbearing," Working Paper No. 992-02, Washington, D.C.: The Urban Institute, 1976.

37. U. S. Department of Labor, 1977, *op. cit*.

38. U. S. Bureau of the Census, 1975, No. 601, *op. cit*.; U. S. Bureau of the Census "Fertility of American women: June 1976," *Current Population Reports*, Series P-20, No. 308, 1977.

39. U. S. Bureau of the Census, *Family Composition*, 1970 Census of Population, Subject Reports, No. PC(2)-4A, 1972.

40. Abromowitz, Susan and Stuart Rosenfeld (Eds.), *Declining enrollments: The challenge of the coming decade*. Washington, D.C.: National Institute of Education, 1975.

41. Low and Spindler, *op. cit*.

42. U. S. Bureau of the Census, 1976, No. 298, *op. cit*.

43. Dickinson, *op. cit*.

44. Gilbert V. Steiner, *The Children's Cause*, Washington, D.C.: Brookings, 1976.

45. U. S. Department of Health, Education, and Welfare, *The Persistence of Preschool Effects, A Long Term FollowUp of Fourteen Infant and Preschool Experiments*. Washington, D.C., 1977.

46. Although the avoidance of income and social security taxes may make it more attractive than labor force participation to some.

AASA

American Association of School Administrators

STATEMENT ON BEHALF
OF THE
AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATORS

Before the
Select Committee on Population
of the
U.S. House of Representatives

Concerning

Some Demographic Factors Influencing
Elementary and Secondary Schools

Submitted by

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May 25, 1978

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Mr. Chairman and members of the Select Committee on Population, U.S. House of Representatives, it is a pleasure to have the opportunity to report to you in regard to the influence of demographic trends on our school system and to highlight some of the implications of changing enrollment patterns on elementary and secondary schools.

While many demographic factors interplay with and influence the school system, the scope of this report is limited to comment on three areas:

A. Increases/Decreases in Enrollment
B. Birth, Death, and Fertility Rates
C. Changes in the Family/Women at Work.

Already in full swing and with inexorable force, our society is undergoing a profound transformation. Low birth and mortality rates, coupled with a fertility rate that has slid steadily downward since 1957, have been yielding a population which will have a larger proportion of elderly people and a smaller proportion of the young.

A. Decrease in Enrollment.

This basic shift in the age-mix of our society portends a series of changes that have dramatic impact upon the school system. The most obvious of these changes is the decline in the number of students entering the schools.

Some Facts:

1. Enrollment in grades K-12 reached a peak of 51,309,000 in 1970. Enrollment will decline through the mid-1980's to approximately 44,500,000, a 13% drop.

2. Secondary school enrollments peaked this year and will decline through 1990, perhaps by as much as 25%.
3. Elementary school enrollments were expected to show an upward swing by 1982-83, but many experts are now pushing the "turnaround" year ahead to 1984-85.

Implications:

An apparent problem at all school levels has been how best to manage this contraction. Many school districts have closed elementary schools, consolidated course offerings, reduced staff, and in a growing number of systems high schools are being considered for closure. Restructuring in order to maintain a broad range of state university systems and private colleges is a controversial issue which has emerged in many states.

But the impact of these changes in enrollment is much broader and more pervasive than a simplistic counting of students, books and excess buildings might suggest.

Some of the implications of fewer student numbers cut deep into the fabric of the educational system, as we have known it.

1. An aging teacher force is developing.
2. Stabilization of curriculum is removing diversity from study programs.
3. Status-quo career ladders are discouraging young leadership.
4. Community dissatisfaction is increasing.
5. Diminishing public support is reflecting new social priorities.
6. Managing decline (vs. managing growth) is requiring hitherto unneeded skills.

7. "Mind-set" against non-growth is a phenomenon at work in the society.

Education, like other industrial-model systems, releases excess personnel in a seniority-ordered reduction-in-force (RIF) pattern. Recently hired minority group members, young teachers, and the non-tenured are usually among the first to be released. Staff cutback, few entry openings, and low teacher mobility have tended to increase the average age and years of experience of our teacher force. It is a teacher force, in some areas, whose composition is reflective of the hiring practices of a decade or more ago: predominantly white, largely middle-class, and now, middle-aged.

Another less obvious, but possible implication should be noted. With fewer young, recently-trained people entering the profession, the introduction of new ideas, different methods or techniques, and diversified programs may decrease. This is not to suggest that mature and more experienced teachers are not creative and effective, they are; however, the desire or willingness to try "something new" is most frequently expressed by the young. Whether it be good or bad, there may be an increased central tendency in curriculum and program.

In the field of education, the upward mobility route to principal, administrator, and superintendent begins in the classroom. Competent classroom teachers, during the post World War II years of growth, could advance quickly up the career ladder. Increasing numbers of students meant an increasing number of schools with frequent openings for emerging leaders.

Today, with fewer students and fewer schools, the number of openings among administrator ranks has also decreased. Because of this decline and the fact that those holding administrative positions tend to stay longer, opportunities for advancement are limited. The result is that eager, qualified teachers, seeking upward mobility feel career bound and are seeking other career outlets.

Social behaviorists would be quick to point out that when opportunities for advancement are cut off, motivation decreases, frustration sets in, and the individual experiences a loss of joy and enthusiasm with his work. The oversupply of competent, well-trained classroom teachers caught in this "closed opportunity" trap may affect the climate of schools and the morale of instructional staffs.

As student enrollments continue to decline the amount of excess or under-utilized school space continues to increase. Economic pressures frequently force school districts into a consolidation of buildings resulting in one or more school building closures. Experience has shown that proposed neighborhood school closures are hotly contested by local parents and can result in considerable negative reaction, reaction which frequently leads to a lessening of parent support for school district funding.

At the same time over-burdened taxpayers, older citizens on fixed incomes, and other cost conscious community members consistently demand school tax relief. Finding a middle ground position between the "no schools closed, all programs maintained" interest group and the "cost-cut/school consolidation" advocates is what most school administrators term the "no-win" situation. Such "no-win" conditions are becoming more usual than unusual in many areas of the country.

Because state financial aid to local districts is based upon student numbers (ADA or ADM), enrollment declines will also bring a resultant dollar loss in revenue to the local district. As local budgets increase and student numbers decrease, the per-pupil cost is artificially inflated. Local residents viewing education's spiraling per-pupil costs often demand economies and efficiencies beyond the reach of the board of education. For many legitimate reasons, school districts are unable to produce the economies of scale capable in other industrial-model systems; as a result, administrator credibility is slowly whittled away and public confidence diminishes.

An additional implication of the decline in student numbers for the schools lies in the area of administrative expertise. There is a growing body of literature that seems to suggest that the management and leadership skills required to manage "non-growth" or decline are markedly different from those of growth. Our current educational leaders, by virtue of their considerable years of growth experiences, academic training, and demonstrated ability, have been uniquely equipped to manage growth. Because decline is so new, similar high-level academic training and experiences in managing system stabilization or decline do not exist. Few, if any, graduate schools have the professional expertise for this task among their faculty members; nor do they offer courses of study in the management of system stabilization or decline. Managing decline is an evolving study area within the management sciences.

Finally, one of the most demanding challenges facing the American school system is coping with the American "mind-set":

bigger is better, new is good, growth is positive! Not to grow bigger and better is almost un-American!

B. Birth, Death and Fertility Rates

A decreasing number of births, a declining fertility rate and an increasing longevity has produced a basic shift in our country's age-mix: fewer youngsters, more adults, and greater numbers of senior citizens.

Some Facts:

1. Numbers of births have fallen nearly every year for the last 18 years, almost 28% from 4.3 million to 3.1 million.
2. Fertility rate has dropped from a post World War II historic high of 3.8 in 1957 to the unprecedented low of 1.8 in 1976.
3. Longevity, or life expectancy, has risen from 47.3 years in 1900 to 73.1 years in 1976.

Within 12 years, if present trends continue, 1 out of every 5 Americans will be at least 55 years old. By the 1990's for the first time in our history, the number of people 55 and over will be larger than the school-aged population.

Implications:

This predictable transformation in the age-mix of our society will have a profound impact upon the kind of education required by the public.

While the traditional student numbers may grow smaller, a broader spectrum of age groups will be seeking educational services. Programs to help cope with the rigors of mid-life career change needs, rapidly advancing technology, swiftly shifting social values, a volatile and competitive job market, increased leisure time, and greater longevity will be required.

The school system will be challenged to manage decline while simultaneously marshalling its resources, both human and material, to provide for the educational needs of a broader segment of our society. Public schools will need to adjust to new demands while still providing services to the young.

C. Changes in the Family/Women at Work

The typical image of the American family: mother, father and two or more children, is increasingly at odds with reality. Changes in family structure and size, increases in divorce and separation rates, and the growing number of one-parent households are altering this traditional model of the family. Similarly will schools be expected to service and supplement new family models.

Some Facts:

1. The growth of female headed households with children has increased by over 250% since 1950.
2. Annual divorces as a percentage of annual marriages, has increased from 25.8% in 1960 to 48.1% in 1976.
3. The proportion of children living with both parents declined from 88% in 1960, to 83% in 1970, and 80% in 1976.
4. It has been estimated that approximately 45% of the children born in 1976 will, at sometime during their school years, live with only one parent -- if present trends continue.

A growing number of women are entering the labor force. There has been a significant increase among those women who are mothers of pre-school and school-aged youngsters.

More Facts:

5. 13.6 million mothers with children under 18 are in the labor force.
6. 5.1 million have children under age 6.
7. 26.8 million children have working mothers; 20.7 million children in grades K-12 (ages 6-17) have working mothers. 6.1 million pre-schoolers (under age 6) have working mothers.

Implications:

- need for day care/after school care
- increased role of the school in parenting
- curriculum change needs
- career counseling and training.

With the increase of one-parent families, many headed by working mothers, there is a growing demand for extended care services for children after the regular school day. Ten to twelve hour nursery/day care services for pre-schoolers of working mothers will become a high priority need. In some areas the local schools have provided these services. The anticipated excess space, as well as the location of most school buildings and the readily available personnel, makes the school a logical place to look for these services in the future.

For a myriad of reasons such as dual working families, one-parent homes, and longer or staggered parent work schedules, there will be greatly reduced at home-time available for parenting. Many traditionally at-home learned behaviors - manners, peer-sharing, self-control, social skills - will be required in the school curriculum.

With a greater demand placed upon the school system to meet the needs of children from varied family structures, redesigned guidance and counseling services, revised curricula, and additional support services will also be required.

Curriculum changes, particularly at the secondary level, to prepare students for new roles in the world of work and living are necessary. With the trend toward deferred marriage and child raising, today's young people would benefit from curriculum materials stressing skills in personal financial management, developing competencies for independent (single) living, and coping skills for dealing with and understanding their personal relationships.

SUMMARY

The demographic factors discussed in this brief paper are but a few of the many influences that will impact upon elementary and secondary schools in the years ahead. These alone, however, suggest significant change. Some of the potential changes ahead might include

- an increased emphasis placed upon the development of leadership abilities in managing "no-growth" or decline
- the inclusion of a broader age-segment within the schools, particularly as the life-long learning need of older age groups is recognized
- an increase in the demand for nursery/pre-school/day care/extended after school care services for children of working mothers

- curricular and program revisions at all levels
- an increase in special support services for the children of one-parent families and dual working families
- a greater emphasis placed upon new and different types of in-service programs, particularly geared to meet the renewal needs of experienced faculties.

It is also prudent to anticipate that

- new priorities will emerge and vie with education for national support
- maintaining local tax support for schools will become increasingly more difficult as local parent constituencies diminish
- as enrollments decrease, competition for students of all ages and grade levels will increase
- because of the American "mind-set" some one-time loyal school supporters will disassociate themselves from a "declining" institution and seek other more positive involvements
- status-quo career-ladders will be discouraging and some potential leaders will seek careers in other fields.

DEMOGRAPHY AND CHANGING ENROLLMENTS

by
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Office of Academic Affairs
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U.S. House of Representatives
Select Committee on Population

Thursday, May 25, 1978

Foreward

In the next fifteen years American schools will experience a series of fluctuations in their enrollments due to demographic changes. The mid 1970's saw the beginning of total enrollment decline, starting at the earliest grades, even as high school enrollments were slowly reaching their (probable) 20th century peak. In the 1980's elementary enrollments are expected to increase, while secondary school enrollments decline continuously. These changes in enrollments are the result of past changes in the birth rate -- the baby boom and bust -- and expected future changes. Demographers expect a rise in births shortly as the aging baby boom babies begin, finally, to settle down and have children of their own, and this will affect elementary school enrollments in the 1980's.

This paper outlines the certain and probable scope of enrollment fluctuations at the national level and suggests some general actions school systems might take to accommodate themselves to these changes. These suggestions principally involve increasing flexibility in physical plant and staffing and in protecting the interests of those likely to be affected by change. Planning for flexibility ten to fifteen years from now is perhaps not too difficult; preparing for more immediate change, which will be mostly decline, will require greater effort. The alternative will almost certainly involve considerable strife and controversy, as school systems are faced with the necessity to close schools and lay off teachers. Careful preparation may not avoid all strife and controversy, but it should help ameliorate the situation.

Lack of preparation for decline will also surely result in, or at the very least exacerbate, a great waste of resources, particularly human resources.

Enrollment fluctuations will, of course, vary among school districts, depending on past and current migration patterns (and, to a lesser extent, on local differences in fertility and school attendance). For example, secondary school enrollments are expected to decline, nationally, about 25 percent between 1976 and 1990. However, places which are now experiencing in-migration may well show an increase, while other places may have an even more precipitous decline.

It is clear that both future plans and more immediate preparations depend on reasonably accurate estimations of probable enrollment changes. Although the national trends in enrollment are fairly well known, it is the local districts which will have to deal with the changes. The development of state and local capabilities in enrollment estimation and forecasting is, therefore, strongly recommended.

I. DEMOGRAPHIC BACKGROUND TO RECENT TRENDS

Virtually everyone is now aware that school enrollments are declining from record levels. Enrollments in the elementary schools (K-8) peaked in 1969, high school enrollments (9-12) peaked in 1976, and enrollments at the post-secondary level will probably reach their highest level within five years and then decline.[1] The reason for the enrollment increases and subsequently observed, or shortly expected, declines is also well known, at least at the K-12 level.

America experienced a record high level of births for 18 years, from 1946 to 1964. In each of those years, births exceeded any year previous to 1946, usually by at least 25%; from 1954 to 1964, numbers of births exceeded 4 million each year. The maximum number born was, however, recorded in 1957. The decline, barely perceptible at first, began to accelerate in the early 1960's. The last year of 4 plus million births was 1964. There was a sharp 7% drop in 1967 and the decline in numbers born continued (with the exception of a small upturn in 1969 and 1970) to 1973. The level held fairly steady at just under 3.2 million a year until 1977 (See Table I and Figure I). This represents a decline of over 20% in just one decade (1964 to 1974). In 1977 a long awaited upturn apparently began, as births rose to slightly over 3.3 million.

II. ENROLLMENT PROSPECTS BASED ON BIRTHS WHICH HAVE ALREADY OCCURRED

Enrollments for the nation as a whole, at least at the K-12 level, can be

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[1] HEW, Projections of Education Statistics to 1984/85, 1976. pp. 18, 21. See Table II and Figure II.

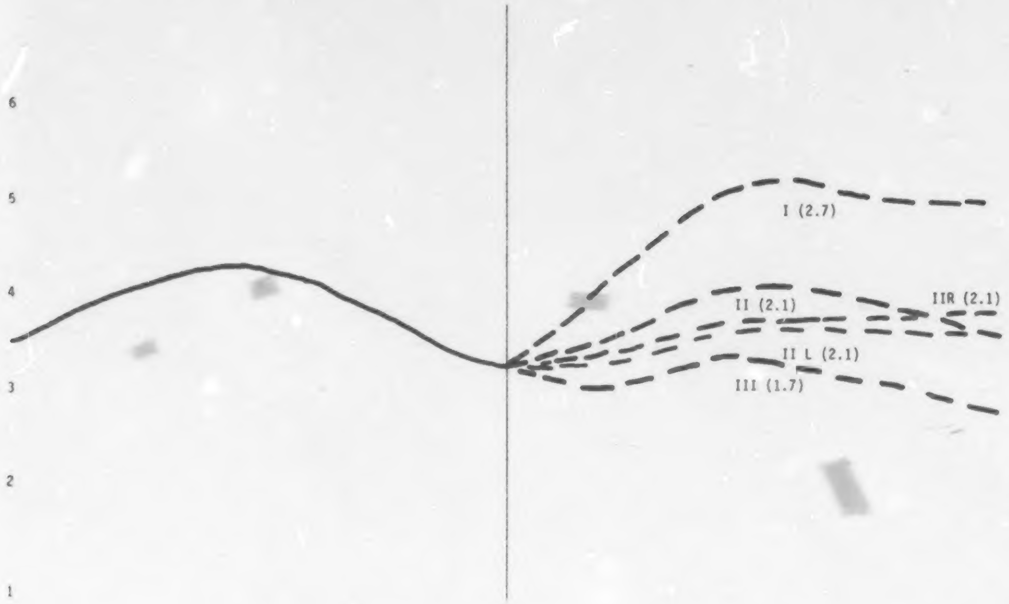
TABLE I

Estimates and Projections of The Average Annual Number of Births: Selected Years, 1940 to 2000 (000's)

Years (July 1 - June 30)	Series I (2.7)	Series II (2.1)		Series IIL (2.1)	Series IIR (2.1),	Series III (1.7)
ESTIMATES						
1940-45			2,903			
1945-50			3,555			
1950-55			3,949			
1955-60			4,274			
1960-65			4,171			
1965-70			3,613			
1970-71			3,709			
1971-72			3,408			
1972-73			3,191			
1973-74			3,112			
PROJECTIONS						
1974-75 (1)	(3,372)	(3,178)	3,187	(3,172)	(3,163)	(3,049)
1975-76 (1)	(3,679)	(3,285)	3,126	(3,240)	(3,234)	(2,946)
1976-77	3,932	3,265		3,310	3,333	2,958
1977-78	4,156	3,575		3,377	3,435	3,092
1978-79	4,356	3,720		3,440	3,528	3,223
1979-80	4,539	3,865		3,498	3,611	3,323
1980-85	4,958	4,088		3,625	3,761	3,416
1985-90	5,243	4,146		3,717	3,875	3,376
1990-95	5,093	3,949		3,719	3,906	3,173
1995-2000	5,076	3,783		3,778	3,951	2,944

(1) Estimate of 3,187 for 1974/75 and 3,126 for 1975/76 is from National Center for Health Statistics, Monthly Vital Statistics Report, Vol 25, no 6, page 1, August 27, 1976. These estimates became available after the projections were made.

FIGURE 1



BIRTHS BY PROJECTED LEVEL OF COHORT FERTILITY (FIVE YEAR AVERAGES) predicted with some degree of certainty into the 1980's and beyond, depending on the grade level, since most of the births that form the basis for these enrollments have already taken place.

A. Enrollments in Elementary Schools - Decline to 1983

Table II displays the enrollment projections found in the HEW publication, Projections of Education Statistics to 1984/85 which was published in 1976. These are shown graphically in Figure I. Enrollments in the elementary grades (K-8) are projected to decline 16% between the peak year of 1969 and 1981 (from 36,797 to 30,800). A slow upturn is shown after 1981. However, careful analysis of the figures used in the projection show it to be based on an assumed upturn of about 2 1/2 to 3% in births in 1975.[2] In fact, numbers of births declined slightly in 1975 (there were an estimated 3,149,000 births in 1975, compared to 3,166,000 in 1974) and the decline continued through the first eight months of 1976. Enrollments at the K-8 level should, therefore, continue to decline to 1983, if not beyond.

B. Enrollments in Secondary Schools - Decline to 1990

As can be seen in Table II and Figure II, secondary school enrollments are projected to decline steadily from their projected high of about 15,600,000 in 1976. The projection is taken to 1984, when enrollments drop to about 13,300,000, a 15% decline in the 8 years from 1976 to 1984.[3] (The average rate of decline between the two years is 2 per cent per year.)

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[2] Ibid. Table B-1, "School-age population ages 5,6 and 5-13: US 1964-1985" p. 153.

[3] In fact, that drop is shown to occur in 7 years; 9-12 enrollments in 1983 equal those of 1984. Recall the temporary increase in births 14 years before these dates. (1969 and 1970).

TABLE II

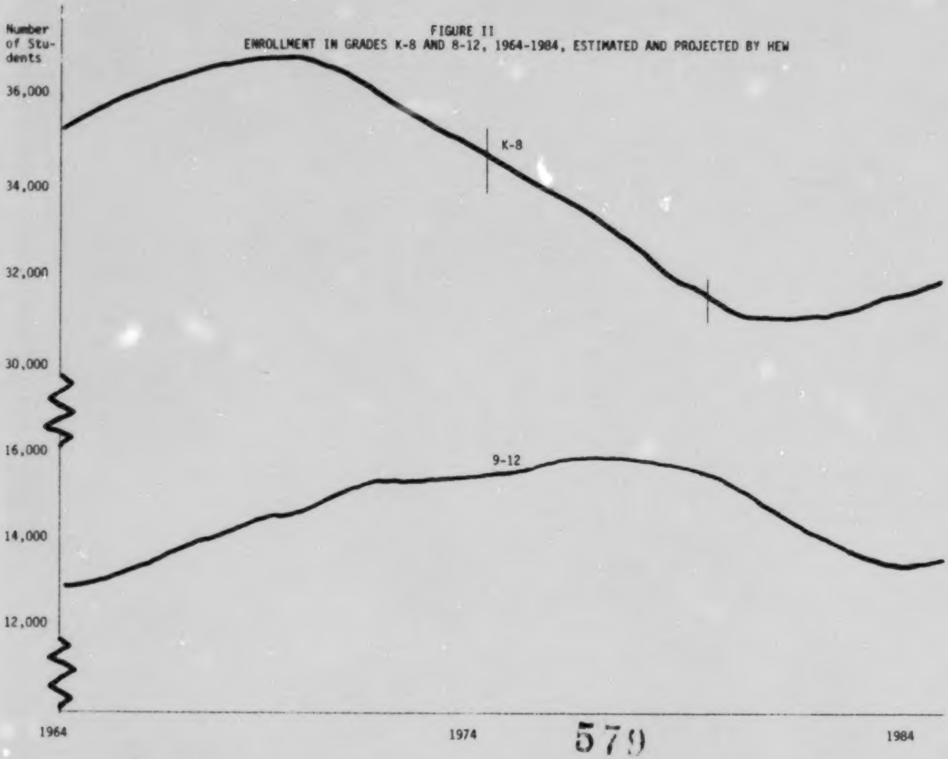
Enrollment in Grades K-8 and 9-12, Fall 1964 to 1984 (000's)

Year	K-8	9-12	K-12
1964	35,025	12,691	47,716
1965	35,463	13,010	48,473
1966	35,945	13,294	49,239
1967	36,241	13,650	49,891
1968	36,626	14,118	50,744
1969	36,797*	14,322	51,119
1970	36,677	14,632	51,309*
1971	36,165	15,116	51,281
1972	35,531	15,113	50,644
1973	34,953	15,277	50,229
1974	34,419	15,337	49,756
		Projected	
1975	33,800	15,500	49,300
1976	33,300	15,600*	48,900
1977	32,600	15,500	48,100
1978	31,800	15,400	47,200
1979	31,100	15,100	46,200
1980	30,900	14,600	45,500
1981	30,800	14,100	44,900
1982	30,900	13,600	44,500
1983	31,200	13,300	44,500
1984	31,500	13,300	44,800

*Peak year.

Source: HEW, Projections of Education Statistics to 1984/85, p.18. Numbers include public and non-public schools.

FIGURE II
ENROLLMENT IN GRADES K-8 AND 8-12, 1964-1984, ESTIMATED AND PROJECTED BY HEW



Since births continued to decline to November, 1976, secondary school enrollments cannot be expected to increase in any significant way before the early 1990's. All things being equal, secondary school enrollments should reach a low point of about 12,000,000 in 1990 when the students in grades 9-12 will come from the small birth cohorts of 1973 to 1976. These birth cohorts were about 25% smaller than those of 1960 to 1963, which formed the basis of secondary school enrollments in 1977.

To predict elementary school enrollments on the basis of numbers of births a certain number of years earlier is fairly reasonable, at least at the national level, since virtually all children attend the elementary grades and automatic promotion based on age has been customary for two decades. Secondary school enrollments, however, include a discretionary factor which complicates projections. (The discretionary factor is of such importance in postsecondary education that this level will be dealt with in a separate section.) There is some evidence that the continuation rate has declined in recent years in some places.[4] In New York City, a rising proportion of drop-outs is attributed to a changing ethnic mix in the city, since Blacks and Puerto Ricans are said to have a much higher drop out rate than Whites, and these groups have increased proportionally to Whites in recent years. To the extent that this differential is true nationally, and to the extent that these differential rates persist over the next 15 years or so, continuation rates would tend to fall, since non-White youth will comprise an increasingly larger percentage of persons 14-17 years of age.

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[4] N.Y. Times, Sunday, October 17, 1976. Personal communication, Isabel Hambright, Population Research Unit, California Department of Finance, in relation to their projected numbers of high school graduates.

National figures do not show any downward trend in high school continuation rates, so the problem may be one for local planners only.[5]

III. ENROLLMENT PROSPECTS BASED ON FERTILITY PROJECTIONS

Enrollment forecasts beyond the early 1980's become increasingly dependent on fertility projections. The entering kindergarten class of 1984 will not be born until 1979; the same birth cohort will enter 9th grade in 1993 and colleges and universities in 1997. Thus, discussion of enrollments for those levels of education much beyond those years depends on what assumptions are made about future fertility behavior.

A. Projected Fertility in the U.S. 1975-2000

The Bureau of the Census issued its latest detailed population projections in 1975.[6] In order to provide a range, they made three separate projections based on three different assumptions concerning completed family size. (Mortality and migration assumptions were the same for all three). Series I is based on the assumption that the completed families of young women now of reproductive age and those who will bear children in the future will average 2.7 children; Series II is based on an eventual completed cohort fertility of 2.1: and Series III on one of 1.7. Series II is generally considered the most reasonable, in part because it conforms most closely with recent surveys of birth expectations.[7] Two additional projections were made using an eventual completed family size of 2.1, but introducing certain variations in the assumptions underlying the projections. Series IIL is based in a later than expected timing of births; Series IIR relates the number of births to the parent cohort. These were done to illustrate the result of certain trends which, although considered possible by demographers, are felt by the Census Bureau to be somewhat less likely than those assumed to underly Series II.

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[5] Percent of persons 14-17 enrolled in school rose from 93.1 to 94% between 1964 and 1969, and then fell to 92.9 in 1974. Such variation could easily be caused by changes in age distribution in the 14 to 17 year old category. (*Current Population Reports*, P. 20, no. 278, Table 2, p.4) The same publication shows an increasing convergence in white and non-white rates of attendance in this age group. By the early 1970's, the rates were virtually equal.

[6] *Current Population Reports*, Series P-25, no. 601. "*Projections of the Population of the United States*: 1975 to 2050" (1975). A later publication Series P25 no. 704, July 1977 did not differ substantially in the age groups and years employed in this paper.

IV. Summary of Sections I to III

To summarize the preceding discussions, we have seen that:

1) Numbers of births declined nearly every year from 1962 to 1976.
2) The percentage decline in that period is nearly 28 percent (from about 4.3 to 3.1 million).
3) This decline has resulted in a 10 percent decline in elementary school enrollments, with a further decline of 7 or 8 percent certain by the middle of the 1980's. (Between 1969 and 1982 or 3, elementary school enrollment will have declined 16 percent, from 36,747,000 to about 30,800,000.)
4) Secondary school enrollments reached their peak in 1976. They will decline through the 1980's, perhaps by as much as 25 percent.

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[7] Current Population Reports, Series P-20 No. 277, "Fertility Expectations of American Woman: June 1974", (February 1975).

5) Enrollment in grades K-12 combined, reached a peak in 1970 (51,309,000). It will decline to the mid-1980's (to about 44,500,000 or about 13%).

6) The course of elementary enrollment beyond 1982 or so and secondary school enrollment beyond 1990 depends largely on the level of fertility after 1976. The Census Bureau has projected fertility for the rest of this century (and beyond) according to three assumed sizes of completed families. These are: 2.7, 2.1, and 1.7 children per woman. Additional projections for a 2.1 level of cohort fertility were done, one using a later than generally expected average age of childbearing, and the other an oscillating level of completed fertility dependent on the size of the parent cohort. Series II is considered to be the most likely level of future fertility.

V. Implications for Enrollments

Depending on which level of projection Series is chosen, widely different conclusions about the probable course of future enrollments may be drawn (Numbers are in 000's).

a) Series I (2.7 children) would result in:

  i. A 51 percent increase in population 5-13 between 1980 and 2000 (30,441 to 45,923).

  ii. A 31 percent increase in population 14-17 in the same period (15,753 to 20,575).

*b) Series II (2.1 children) would result in:

  i. A 19 percent increase in population 5-13 between 1980 and 2000 (30,246 to 35,963).

  ii. A 6 percent increase in population 14-17 (15,753 to 16,752).

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* Preferred projection series

TABLE III

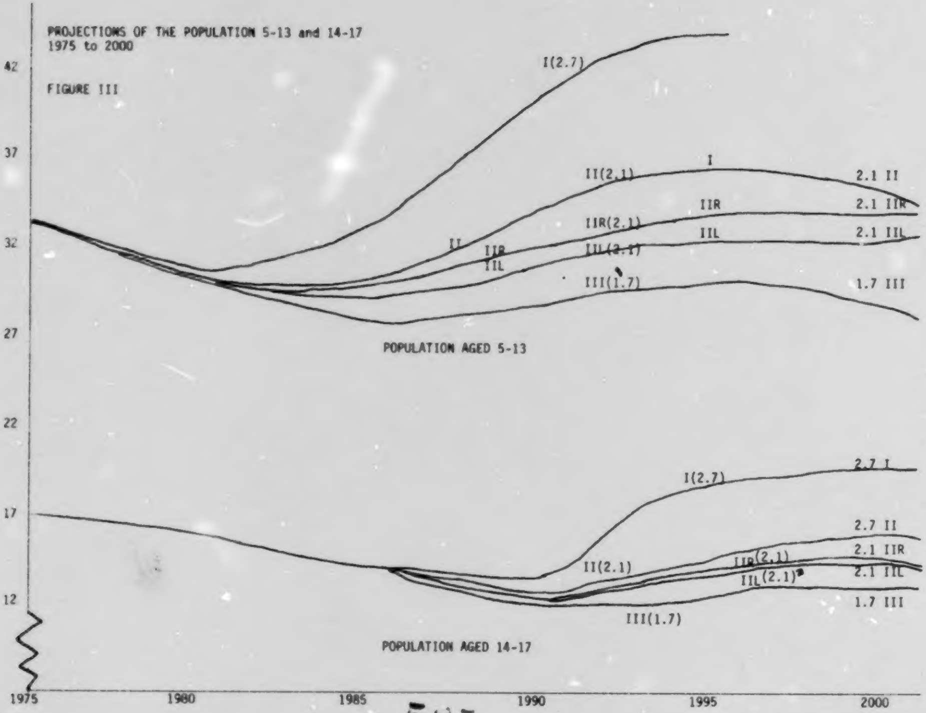
ESTIMATES AND PROJECTIONS OF THE POPULATION BY SELECTED AGES: 1950-2000 (000's)

Ages 5-13

	Series I	Series II	Series IIL	Series IIR	Series III
1950	22,423				
1955	27,925				
1960	32,965				
1965	35,754				
1970	36,636				
1975	33,441				
1980	30,441	30,246	30,235	30,228	30,112
1985	33,330	30,380	29,378	29,645	27,954
1990	41,282	34,643	31,434	32,379	29,383
1995	45,725	36,799	32,868	34,179	30,320
2000	45,923	35,963	33,213	34,758	29,119

Ages 14-17

	Series I	Series II	Series IIL	Series IIR	Series III
1950	8,444				
1955	9,247				
1960	11,219				
1965	14,153				
1970	15,910				
1975	16,923				
1980	15,753				
1985	14,888				
1990	13,538	12,941	12,879	12,867	12,463
1995	17,912	15,317	14,055	14,439	13,210
2000	20,575	16,752	14,873	15,432	13,915



PROJECTIONS OF THE POPULATION 5-13 and 14-17
1975 to 2000

FIGURE III

c) Series II L (2.1 children, with a later average age of childbearing) would result in:

   i. A 10 percent increase at ages 5-13 between 1980 and 2000 (30,253 to 33,213).

   ii. A 6 percent decrease at ages 14-17 in the same period (15,753 to 14,873).

d) Series II R (an oscillating level of completed fertility dependent on the size of the parent cohort) would result in:

   i. A 15 percent increase in population 5-13 between 1980 and 2000 (30,226 to 34,758).

   ii. A 2 percent decrease in population 14-17 (15,753 to 15,432).

e) Series III (1.7 children) would result in:

   i. A 3 percent decrease in population ages 5-13 between 1980 and 2000 (30,112 to 29,119)

   ii. A 12 percent decrease at ages 14 to 17 (15,753 to 13,915).

VI. EXPECTED ENROLLMENT TRENDS ASSUMING SERIES II FERTILITY

A. Enrollment in Elementary Schools (K-8)

As indicated in Table III, the population aged 5-13, which forms the basis for elementary school enrollments, will decline about 10 percent between 1975 and 1980 under all the projected Series, including Series II and IIL. The decline to 1980 is certain since nearly all the children who would be 5 to 13 in 1980 had been born when the projection was done (mid-1975). In 1980, that age group will be just 83 percent of what it had been in the peak year of 1970, or approximately what it had been in 1957.

Little change in the number of children 5 to 13 is projected between 1980 and 1985. The following ten years, to 1995, will see growth, however. In the five years between 1985 and 1990, the number of children of elementary school age will increase 12 percent, if the most likely age pattern of childbearing is followed.[8] There will be another 6 percent increase between 1990 and 1995. In 1995, there will be about as many children of elementary school age as there was in the peak year, 1970. Thereafter, the size of this age

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8. If later childbearing becomes the mode, growth will be much slower, but it would continue into the 21st century. Under Series II L, there would be 10 percent more children age 5 to 13 in 2000 than in 1980, under Series II, there would be 19 percent more. Seriew II R is somewhat similar to Series II L in the sense of continuous growth beyond 1995, but the rate of increase is faster. If its assumptions were correct, there would be 15 percent more children in that age group in 2000 than in 1980 and the growth would continue into the first two decades of the 21st century.

group will decline again for 15 years. The decline will continue to 2010, when the projection shows a total of 34,335,000 children age 5-13 (about the level of the early 1960's).

In summary then, the decrease in elementary school enrollments which has occurred since 1970 will, under Series II fertility assumptions, continue into the early 1980's. There will be no substantial turn around until after 1985. However, growth after that will be fairly rapid, since children of elementary school age will increase 12 percent in the next 5 years and 20 percent in the 10 years between 1985 and 1995. The 15 years after 1995 will again see a decline, but only between 6 and 7 percent.

It is the difficult task of educators to prepare not only for the substantial and inevitable decline of the next few years, but also to plan for a reasonably certain upturn thereafter. There is very likely to be as many children in elementary school in 1995 as there was the peak year of 1970, before the current decline. Fortunately, there will be some advance notice of the upturn, as there was of the downturn, given the lag between birth and entrance into school. If births start to increase rapidly toward the end of the 70s, as they will if Series II fertility is a reasonable choice, then educators should begin to inform the public of the need for increasing resources, preparing teachers, etc.

B. Enrollment in Secondary Schools (9-12)

Table III presents estimates and projections of the population aged 14 to 17, which is the basis for secondary school enrollments. The steady decline of nearly 25 percent from the current high of close to 17,000,000 to under 13,000,000 in 1990 is certain since most persons who will be that age in 1990 are already born. Growth after 1990 will be rapid, however. Between 1990 and 1995, numbers in that age group will increase nearly 19 percent under the Series II assumptions. (Even under the less likely pattern of later childbearing in Series II L, those 5 years would see a 9 percent increase in young persons of secondary school age. Series II R fertility would cause a 12 percent increase.)

Another 10 percent increase between 1995 and 2000, projected by Series II, would bring that age group nearly back to its peak 1975 level. All in all, if Series II is reasonably correct, and enrollment rates remain equal to current ones, we can expect a 30 percent increase in secondary school enrollments in the decade of the 90's. Should childbearing be delayed (Series II L), the increase would be a more modest, but still substantial, 16 percent (20 percent under the pattern of II R).

The upturn in secondary school enrollments will be even sharper than that in elementary schools, just as the downturn will be, because of the smaller age span involved. However, the advance warning will be greater, too.

VII. PREPARING FOR ENROLLMENT CHANGES

A. Projecting Likely Changes

It scarcely needs mentioning that it will not be sufficient to simply monitor the national birth rate in order to ascertain probable enrollment changes within local school districts. Growth, like decline, will occur more sharply in some areas than in others. Aside from any local differences in birth rates, there are important differences in migration experience, both regionally (e.g., the movement from the Northeastern and North-Central states to those of the Southwest and West) and within regions (e.g., from central cities to suburban rings).

Unfortunately, projections of local populations by age are not easy to do since they depend so heavily on estimating future migration patterns. The demographic art of local migration forecasting is in considerably less satisfactory a state than even annual fertility forecasting. In many instances, it is not even possible to know with any exactitude what recent past migration patterns have been, much less to forecast them. On the whole, U.S. migration statistics are awkward to collect and to analyze since we do not keep registries of movement as we do of births and deaths. We depend on the census, including special surveys, and retrospective reporting to understand migration patterns. Very often all that can be known is the net migration; the exact numbers of immigrants and emigrants which compose that number can only be surmised.

Nevertheless, planning for future flexibility in meeting enrollment change and the handling of present crises require some idea of the likely shape of future enrollments in local districts. It is therefore of the utmost necessity that administrators have access to the best estimate of their district's current population by age and that they develop their capacity to estimate its likely future configurations. While many of the largest school districts have staff who project enrollments - usually by the grade progression method combined with a local birth rate-based estimate of future kindergarten entrants - few are equipped to estimate the range of probable enrollments as long as five years, much less 10 or 15 years, out. It would be very useful if state governments would provide demographic projection services to local school districts, perhaps in cooperation with the Bureau of the Census. (The Bureau of the Census has done some work in the field of small area census in a project called the "Dual Independent Map Encoding File" supervised by Jacob Silver.) Given the difficulties in predicting small area migration patterns, such services, to be useful, would need the input of persons familiar with local problems and prospects. As part of the service, school administrative staff could perhaps be trained to monitor the situation from year to year and make tentative corrections based on current experience.

The development of a pilot project to help school districts project their future enrollments and hence plan rationally would, in my estimation, be one of the most productive uses of educational research money that agencies such as the National Institute of Education (NIE) could make. It is difficult to see how administrators can plan for the future without some idea of how many students they are likely to have at each school.

B. Suggestions for Responses to Fluctuations in Enrollments

Aside from developing procedures for determining likely local changes, I believe it would be useful for educators to consider strategies of flexible response to rapid enrollment change. That rapid change will, is, occurring is certain, or nearly so. Some areas will be more affected than others, but nearly all will be affected to some degree. Two possible examples of flexible response to rapid enrollment change might include lease arrangements for prefabricated buildings centrally owned, say by the state or by a group of districts, and one year certification programs for holders of appropriate bachelor's or Master's degrees.

The idea of a flexible physical plant arises from accounts of school closings and the attempts of school districts to sell or rent the property. Apparently it is not easy to find alternative uses for school buildings. In 15 or 20 years, many districts could again be faced with the need for more classrooms, albeit differently distributed than those in existence today. This need, for reasons of fertility change or migration could be fairly short-lived.

While discussing strategies apparently designed to increase rapidly the supply of teachers seems a little out of place in today's market, the one year post BA or MA credential system actually allows both rapid increase and contraction of the supply of new entrants. A person need not make a firm commitment to the field until the senior year, thus one need not predict the job market four years in advance. Plans for encouraging a rapid increase may not be entirely out of place, however.

A study by Peter Morrison points to the possibility of a teacher shortage sometime in the 1980's.[9] The factors thought to underly this possibility are:

1) The poor job market, which is discouraging students from entering teacher training.
2) The age structure of the current stock of teachers and especially of the reserve pool of teachers, which consists of former teachers who left the field to raise families and whose children are either grown or considered old enough to leave. By the late 1980's, a large number of these persons, products of "the initial large cohorts of teachers produced in the mid 1950's will be reaching advanced ages."
3) A projected annual increase of 2 to 3 percent a year in school enrollments, due to begin in 1985.[10]

I do not intend to defend either of the above suggested strategies. I pose them merely to urge educators to plan for flexible response to future ups and downs in enrollments. This should include somehow minimizing lengthy investments by the taxpayers in physical plant and by individuals in preparing for careers.

Planning for the projected growth of the late 1980's and 90's and possible later downturns, will be relatively simple compared with managing the downturn which is now underway and which will continue through the 1980's. The buildings are already there and so are the teachers, trained and committed to a career. It is in this area of present crisis requiring immediate action that outside technical assistance sponsored by agencies like NIE could be of particular help.

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[9] Morrison, Peter A., The Demographic Context of Educational Policy Planning, Rand Paper Series, P-5592, p. 17-22.

[10] Ibid., p. 18 and 19

Since a number of districts have already been faced with the problem of surplus plant, it would be useful to collect accounts of how this problem has been faced in various places, along with general advice from such professionals as architects and economists or others with background in property management. Advice in the political management of school closings might be even more valuable. These analyzed case histories and suggested solutions could be collected in a manual to guide districts facing decline. Perhaps task forces of persons with experience in such matters could be set up as a supplement to the manual to aid districts newly faced with such crises as the necessity to close schools.

More serious than school closing, in my opinion, is the possibility of lay-offs for teachers who have invested years in their professions. While some districts may be able to handle the matter through attrition, reassignment and austerity (and could be helped to do so with experienced outside advice, as suggested above for school closings), others will not. The virtually certain 25 percent decline in secondary school enrollments will not be evenly distributed across the nation. For reasons of local age structure and migratory movement, some districts may well have secondary school enrollments drop to half, or less, of the current level. It seems worthwhile for teacher organizations and other groups to consider ameliorating the impact of such layoffs. Possible ways to do so might include clearinghouses for employment, including employment outside the profession, and insurance schemes designed to subsidize re-training. Such activities would be a useful addition to job security clauses in labor contracts, insofar as improving the future prospects for persons now in the teaching profession goes. At the least, teachers should be advised of the possibility of future employment problems due to projected enrollment changes in their districts and of ways to alleviate the consequences to themselves as individuals.

Even those districts which do not have to resort to lay-offs will not be in a position to do much new hiring in the 1980's. While no scheme will make up for the loss of youthful energy and enthusiasm, "teacher renewal" programs could help moderate any tendency toward stagnation. For example, well designed in-service training could help keep experienced teachers up to date on promising new teaching methods and developments in their academic fields.

At the university level, the sabbatical system helps refresh teachers and also brings in new faces as their replacements. It is doubtful that most districts could afford a sabbatical program, but federally financed fellowship programs might be of some assistance. Another way to achieve some turnover would be for teachers to switch places occasionally. Ideally, a school which has developed an exciting new program would "lend" teachers to neighboring districts, who in turn would send some of their teachers to the innovative school. Opportunities for retraining and placement in other jobs might encourage those tired of teaching to leave the field, opening positions for the more enthusiastic. Clearly another fruitful field for NIE assistance would be the development of such "teacher renewal" schemes, which school districts could refer to as places for new hires diminish and disappear. As before, I do not intend to develop a case for the above suggestions, merely to encourage educators to plan for virtually certain future circumstances.

C. Summary to Section VII, Preparing for Enrollment Changes

1) Changes in enrollments will differ from school district to school district, principally because of differences in local migration patterns.

2) Administrators need to know probable future enrollment trends in their districts in order to plan rationally; however, few school districts have the technical capacity to project enrollments as much as five years in the future.

3) School districts need aid to project the likely range of future enrollments (a range of projections is preferable since small area forecasting is an uncertain art). Such aid could well be supplied by a state agency, perhaps in cooperation with the Bureau of the Census.

4) Some possible responses to fluctuations in enrollments are:
   a) lease arrangements for prefabricated buildings centrally owned by the state or by a group of districts.
   b) one year certification programs for holders of appropriate BA or Master's degrees.
   c) programs to retrain and find new employment for administrators and teachers in districts facing sharp enrollment declines.
   d) the development of "teacher renewal" programs.

THE MANAGEMENT OF DECLINE IN HIGHER EDUCATION

A statement by President Robert C. Spencer
Sangamon State University, Springfield,
Illinois before the House Select Committee
on Population, Washington, D. C.
May 25, 1978

Mr. Chairman, not being a specialist on population I am uncertain how I can add to the contributions already made by the demographers and sociologists on this panel It happens, however, that I have witnessed and experienced some consequences of the things we are talking about today, namely, the impact of population shifts upon the planning and management of higher education. In particular I speak of a new institution of which I have been privileged to have been founding president these past nine years. Hardly had Sangamon State University opened its doors in the fall of 1970 than it was faced with reduced enrollment expectations, changed planning strategies, altered schedules for completion, and a perceptible redefinition of its mission. Under such circumstances part of the leadership task became the "management of decline" as well as institutional development. It is an experience which many institutions are or will be going through in the years ahead as higher education comes to be a "no growth industry" in many parts of this country. Let me tell you a bit of the story.

Sangamon State University is today about half its planned size for the current academic year, and in the 1980's will be about one-third as large in headcount and one-fourth in full-time-equivalent student enrollment as its original planners conceived it in the late 1960's. Such reductions in enrollment of an ongoing institution, wherever located, would be disastrous indeed. It has a real but less visible impact upon an institution which is new and growing, but will not achieve its planned size in the foreseeable future.

In this situation we are not alone. Many colleges and universities are already adjusting to the demographic realities of the 1970's and 1980's, to leveling or reduced enrollments, to an older and atypical undergraduate student body, to underutilized physical facilities, and to shifts in the "marketability" of curricular options.

Sangamon State University, however, optimistically came off the drawing boards of Illinois' educational planning and coordinating agencies less than three years before these demographic changes began to hit all of higher education. Generously funded from the start, SSU did not have the lead time, if you will, to establish its reputation and its clientele, and to stabilize its program offerings before its own new "depression" hit. That we are a going enterprise today in spite of these difficulties testifies to the resilience of the faculty and staff, to the resourcefulness of the internal planning process, and to the continued confidence of our several external boards and agencies, including the legislature. For better or for worse, our setting in the state capital of one of the nation's great states has given SSU an earlier opportunity to test its mission and programs under public scrutiny.

Before continuing, let me explain briefly just where Sangamon State University fits into the array of post-secondary institutions across the country. Clarifying that point will also make it easier to understand some of the long-term difficulties which a number of new institutions, as well as many older ones, will face in the years ahead. The 350 state colleges and universities in this country now serve some 50 percent of all baccalaureate students in public sector senior institutions. In the post-war years these were the most rapidly growing institutions of all, and successfully absorbed much of the enrollment expansion in American higher education--sharing this expansion with new public community colleges as it came on line throughout the sixties and seventies. This growth was engendered not only by the post-war baby boom, but also by the ideas of expanded educational opportunity which generous funding, a flourishing economy, heightened expectations of social mobility and personal growth, and in some instances opportunity and growth, which local pride and boosterism had sought.

Within this astonishing record of educational growth, the older land-grant insitutions and many private colleges and universities also expanded. Educational planning boards and agencies sponsored much of the growth, but much also occurred as tuition increases and generous public funding permitted ad hoc institutional expansion in response to enrollment pressures. Sangamon State University is part of a sub-group of these new, planned, public institutions. They were founded in response not only to regional demographic changes, but also to the growing number of community college graduates seeking admission to senior institutions for completion of baccalaureate studies. America has never been without a great public faith in education at all levels--as an equalizer of opportunity, and as a panacea for a better world. These years were characterized by untested and unchallenged assumptions about the value and utility of nearly univeral post-secondary education in a democratic, industrial society.

Sangamon State University and Governors State University were designed primarily to meet the new community college and graduate/professional student "markets" in Illinois. In Florida four of these upper-level institutions were started, and in Texas, eight--either as freestanding institutions or as branch campuses of existing universities. New York had two, now one, as did Michigan. For the most part these upper-level institutions were well located in urban or suburban settings and had styles which made them academically as well as geographically accessible to an increasingly heterogeneous student body. They had, in addition, close affiliations with nearby community colleges.

Among the public four-year institutions founded during this era were two in New Jersey--Ramapo and Stockton State colleges; Oakland University and the Grand Valley State Colleges in Michigan; half a dozen in California; Evergreen State College at Olympia, Washington; and an equal number of new or greatly expanded four-year campuses in New York state. Wisconsin added branch campuses to its land-grant system at Green Bay and Parkside, while the University of Illinois branched at Chicago Circle, and Southern Illinois University at Edwardsville.

More than being new or "emerging institutions," these institutions had another very significant experience in common. They were founded, or were expanded at a time of unprecedented social ferment and unrest in America. The implications for educational leadership and institutional management were soon clear: students and many faculty, intensely unhappy with existing social institutions and with the quality or performance of America's political and corporate leadership, began testing new areas of dissent and new lifestyles. The new universities about which we are speaking recruited many of their faculties from the nation's major graduate schools and from some of the best and most troubled campuses during this period. Some institutions became, in short, testing grounds not only for most appropriate curricular changes and carefully designed innovative programs, but also for the ideologies of disenchantment and liberation, for alternative lifestyles as well as experimental programs.

There were two major consequences for university leadership and management from this change in the environment of higher education and the troubles in the world "outside." First--and particularly in public sector institutions--policy and administrative decision making, whether at the campus or higher levels, soon had to comply with new levels of participation by campus constituencies. This was in turn accompanied by new levels of openness for public meetings and internal processes. Second, on many campuses the petition, the referendum, the electoral politics, and populist rhetoric became for many faculty the standard of academic legitimacy rather than appointed or traditionally selected consultative bodies dominated by tenured faculty and seasoned academic administrators. Inexperience and political skill became more viable than experience and practical judgment in such settings. Finally, to older measures of fitness for academic appointment or reappointment, scholarship, teaching, and public service were added either overtly or otherwise, new tests of sincerity, ideological purity, or sensitivity to group norms of the alienated or the newly liberated.

On older campuses with stable internal governance, with established standards of quality in teaching, scholarship, and public service, these same pressures and constituencies could and very often did provide healthy stimuli for debate and solid contributions to needed educational change and more responsive bureaucratic styles. An on-going academic community with a sense of its own worth and valued academic traditions will manage these forces of change differently than a new one struggling to establish its reputation and credibility, its teaching styles, and those standards and internal procedures which free its staff and faculty for serious academic tasks.

But the new public institutions of the sixties and seventies, as well as many older public institutions, have another hurdle to jump. That hurdle is set by the array of technical reporting requirements of legislatures and coordinating, governing, budgeting, and auditing agencies. These require that public colleges and universities regularly prove that their performance is worth the cost. Accompanying these very understandable demands for accountability is a growing suspicion that the promise of universal higher education may not be bringing about the better world; but that, indeed, it may be bringing only more unrest, confusion, and alienation from what good was left of the old world. More recently, too, Johnny's college-educated older brother and sister have been found less literate and informed than expected, despite the vast resources devoted to their training and development.

Doubts about the value of higher education seldom lead to serious discussion about the quality or rigor of what should be taught, about minimal educational requirements for citizenship in a free society, or the purposes of what we do as educators. The enterprise is too complex, diffuse, and questions of quality too subtle, to permit that luxury. Instead we are asked to report institutional output and performance by quantitative measures. This is calculated in many ways: by unit costs per credit hour of instruction, by academic program costs, by faculty workloads, by the research productivity of faculty, by the employability of new graduates, and by compliance with affirmative action guidelines--to mention several. For example, with affirmative action guidelines institutions are required not only to be in compliance, but also to report continuous progress in providing career and employment opportunities for women and minorities. Lack of progress, from whatever cause, could be construed as a flaw in institutional performance. Over a period of one year, for example, required 120 or more reports to a total of 7 major external agencies, and 35 voluntary agencies or institutions in addition to telephone and personal inquiries. Those reports and obligations occur regardless to institutional size.

The required reports are received and studied by a growing number of central staff specialists and experts in assessing parts of the whole. Because internal resources also must be developed to meet external reporting requirements, all public institutions have added to their administrative overhead costs the necessary technical machinery and personnel to survive. This, in turn, adds further to costs and is a special burden on the small institution which has few economies of scale to offset the investment.

As important as the cost, however, is the impact of external reporting on management. More and more professional people within an institution come to understand less and less about the entire institution's operations and purposes. Technical staff loyalties, moreover--like those of many faculty--are directed as much to colleagues and peers outside the institution as to those within from whom the larger picture might be understood. Finally, the closer one gets to the teaching faculty, the less these external reporting obligations and technical requirements are understood or tolerated.

To return to the effects upon higher education of demographic changes, one can assess the impact of this last and most technical requirement of external reporting upon management. It is one which tends to fragment further the attention and perspectives of central decision-makers, leaving untended some educational agenda requiring serious study and the commitment of leadership. Few reporting documents, in other words, are decision documents. Most convey technical information to specialized personnel.

I have called the pattern of management under the condition described here as "perforated decision-making." It is perforated because of the necessary fragmentation of data on institutional performance and the relentless deadlines of external agencies; it is perforated because, while internal governance is highly participative but seldom deliberative, occasions are seldom available to discuss with legitimate internal constituencies the questions and problems of an institution's performance before time runs out; and it is perforated, finally, because external agencies and their professional staffs have too frequently come to rely upon data of this kind more than upon the genuine accomplishments of an institution's faculty and programs as expressions of a whole educational enterprise.

Please understand that I am not discounting the need or value of detailed examination of institutional performance. What I am concerned with is the loss of purpose and perspective because the working environment has become so fragmented that it is difficult to assess responsibility or to prescribe remedies under these conditions. The weakest excuses for failure of institutional performance are procedural or technical; the strongest are substantive and personal. Under the conditions described here the former tends to be substituted for the latter in heavily regulated public sector institutions. Add to this the requirements of reallocation and retrenchment--the "management of decline," if you will--and there is almost no way that decision-making can proceed smoothly. And it is inevitable that central administration in many public institutions will find it easier to seek technical, political compromises rather than to make sound educational decisions.

With "maximum feasible participation" mandated by both internal constituencies and many external agencies, too much energy and skill must be devoted to building relations with constituencies and seeking consensus. When everyone is in charge, one might say, nobody is in charge--although formal responsibility remains the same. Moreover, shifts in population and college and university enrollments in years ahead will undoubtedly continue to cause high anxieties for faculty and staffs as they seek to protect their status, economic benefits, curricular priorities, and professional identities.

Mr. Chairman, rather than make immediate policy suggestions for this committee I have spoken to the conditions for decision-making which many colleges and universities, particularly the newer public ones, find themselves in as demographic changes force shifts in the size and mission of many institutions. In the long term one can probably say that America's public educational establishment is overbuilt in places, and it is very probable that--barring sudden new national educational efforts like that provided in the late 1950's and 1960's by the post-Sputnik era in the sciences--the levels of support enjoyed in the past cannot be sustained in the future.

In my judgment the greatest contribution which could be made in this situation would be for this body and others some how to sponsor an examination of our national educational priorities in light of the need for sustaining and renewing one of the world's last open, free, democratic governments. Our founding fathers and many observers of American history have shared this concern. We have no source other than an enlightened and educated citizenry from which to draw our future Congressmen and leaders, and other public servants--those who represent us and who govern. The demographic realities of the late seventies and the eighties provide an opportunity to set such an agenda as the soundest preparation for the future of this country.

Such an assessment of national educational priorities would recognize many good things which are already being done by our public and private educational institutions. The paralysis and stalemate which make institutional leadership and management so difficult could be reduced if we possessed clearer priorities and purposes. Authority and participative mechanisms car be clarified around acknowledged purposes. To stimulate recovery of purpose in the relationship between education and the survival of a free government in a highly technical, rapidly changing society in a world fraught with conflict, could be one notable outcome for the concerns of this committee.

The conditions of management and leadership described here will affect most institutions to one degree or another in both the public and private sectors of higher education in the years ahead. Survival for some during this period of relative decline or steady state will depend upon several things: geographical and transportation access; an adequate range of degree and program options; the historical legacy and academic reputation of the institution; a sense of mission and institutional pride arising from its accomplishments and shared purposes; and, finally, external support which returns flexibility and a measure of discretion to hamstrung institutional leadership. It will be found that strengthened leadership will yield stronger internal governance and reduced stress and confrontation when it is known that the buck stops where it ought to, and not in external agencies.

The possibility exists that Sangamon State University will meet these conditions and will be given continued support, despite its drastically reduced final size and relatively steady state the next few years. Many of us also believe that it will achieve a reputation and usefulness appropriate to its setting in the state capital in Central Illinois. Looking at the future cynically, one might be assured of future students in light of the growing tasks of government in the years ahead. If that is the case, SSU will bear its share of responsibility that the bureaucracy be well educated and capable of the tasks it will face.

STATEMENT BY

DR. MARY F. BERRY
ASSISTANT SECRETARY FOR EDUCATION
EDUCATION DIVISION
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

BEFORE THE
SELECT COMMITTEE ON POPULATION
UNITED STATES HOUSE OF REPRESENTATIVES

MAY 25, 1978

1:00 p.m.

Mr. Chairman and Members of the Committee:

I am pleased to have the opportunity to testify before this panel on the implications of demographic change in the Nation's elementary and secondary school population. This is a subject with which I and my colleagues in the Education Division have been greatly concerned as we enter a period of long-range enrollment decline. It represents a field in which far-sighted and constructive policy decisions will be essential in the years to come.

I would like to focus today on three major aspects of the problem of demographic change. First, I want to present a brief statistical overview of the issue and indicate the impact that projected population shifts will have on specific segments of our society. Secondly, I wish to discuss the implications of a projected enrollment decline on our system of elementary-secondary school finance and administration. Finally, I would like to suggest some policy options we would do well to consider at this time.

Overview and Impact

It would be wise for us to put the issues involved in demographic change in some historical perspective. Traditionally, we in this country have been concerned with the problems of growth, not decline. In this century alone we have seen the total enrollment in elementary-secondary schools and higher education institutions grow from 17 million to over 60 million. American colleges and universities enrolled 230,000 people at the turn of the century; now the figure is over 11 million, which is a jump of nearly five thousand percent. Growth led to innumerable difficulties--but as we proved in the early 1960's, when we constructed 485,000 new classrooms and trained and employed each year more than 150,000 new elementary and secondary school teachers, we have historically been capable of handling those difficulties well.

As we are now learning, the questions relating to diminishing enrollment are different and more complicated. Their complexity is heightened by the fact that the pattern of decline is not universal.

For example, the Census Bureau projects that 1990 total elementary-secondary enrollment will fall from its current level of 48,736,000 to approximately 45,750,000. The number of students in grades K-8 will actually increase slightly to about 33,870,000 over the present total of 33,003,000, after falling off sharply in the next few years. But the number of high school students will drop sharply from 15,703,000 this year to approximately 11,875,000 in 1990; it should rise sharply through the decade as those elementary students make their way through the school system, but will probably not reach its present number. The reason for all of this is relatively simple. Despite the national trend toward smaller families, the products of the post-World War II baby boom are beginning to have their own children, who will be reaching school age through the next decade.

If this cyclical trend were uniform throughout the Nation, the policy implication would be clear: School systems would be well-advised to go into a holding pattern, and wait for the classrooms now being depopulated to fill once again.

Unfortunately, the pattern is anything but uniform. We anticipate--although I would stress that projections in this area are highly tentative--that there will be a net decline in school-age population in the Northeast and North Central parts of the Nation as out-migration from those regions continues. Yet school districts in the Sun Belt may have to cope with a continued enrollment boom, as the overall population of the South and Southwest rises throughout the 1980's.

Moreover, within these regions there will be population shifts that have even more profound consequences. There continues to be a net movement away from center cities in most parts of the Nation, as there has been for the past two decades. Yet the growth boom of inner-ring suburban communities may well be at or near its end; increasing numbers of people are settling in rural or small town areas or--to a greater degree--in outer suburban areas that are often still classified as rural by the Census Bureau. These emerging suburbs are among the few places many young families can afford to buy homes in today's market--although high commuting costs act as a disincentive to a significant number of families who might otherwise choose to relocate in these areas. There may well be a need for construction of new facilities in some places to serve the enlarged school population these movements will produce, but, given the uncertainty with which locational projections must be made, I would hope that districts do not act in a hasty or precipitous manner.

We have somewhat more faith in the validity of projections of the ethnic composition of the school-age population over the next several years. We expect that, while the minority proportion of the Nation as a whole will rise from about 13% now to about 14.8% in 1990, the percentage of the 0 to 13 age group that is black or other minority will not increase appreciably. However, because of the large drop in the number of white students aged 14 to 17--and the relatively steady number of minority students--we anticipate an increase in the proportion of minority high school students from 15.9% now to 19.4% by 1990.

If present conditions continue, we expect a continued concentration of minorities in central cities. This trend is not a new one; from 1960 to 1976 the number of whites in such areas declined by 8.5%, while the number of blacks rose 40%; as is well known, the proportion of minority students in large-city public schools increased dramatically, and today surpasses 50% in Atlanta, Baltimore, Chicago, Cleveland, Detroit, New York, Philadelphia, and Washington, D.C., among other cities. Unless net out-migration of whites with children dramatically declines, the proportion of minorities in city schools may increase further, despite a rising degree of minority relocation in suburban communities. The real number of non-white children in schools outside of center cities will also rise, of course, as minority families leave the city at an increased pace in the next decade.

This suggests that despite an overall decline in enrollment totals, the percentage--and the number--of students who disproportionately require special services will increase. This trend will be exacerbated by a continuing increase in the number of Hispanic children in California, Texas, and elsewhere. The cost implications should, of course, be a matter of concern to State and local education planners, as well as to the Federal government.

Financial and Administrative Implications

Projected enrollment variations will produce a complex set of economic problems for school administrators. Not surprisingly, many members of the public cannot understand why dwindling school populations have not been followed by dwindling school costs. In fact, to the average taxpayer the reverse has sometimes seemed to hold true; in most cases, school budgets have risen even as enrollments have dropped.

The reasons for this phenomenon are complicated and vary among States and localities. Apart from general inflationary pressure, two primary factors seem to be at work:

- First, as I indicated a moment ago, high-cost students are increasing as a proportion of the school population. Not only do minority and disadvantaged youngsters represent a greater percentage of the total, but a significant additional number of handicapped students will be receiving full educational services under the provisions of the Education for All Handicapped Children Act. This obviously increases average per pupil expenditure levels--although, I hasten to add, the benefits of programs for children with special needs serve the interest of equity and fully justify their cost.

- Secondly, State support is generally geared to enrollment figures, either according to direct count or through some proxy figure. In many States, when the number of pupils in a community declines, State aid may drop--although fixed costs (such as building maintenance) do not. Moreover, teaching staff salaries often represent more a fixed than a variable expenditure, since staff reductions are often difficult and painful to bring into effect. Since teacher salaries customarily represent 55-60% of a district's budget, the problem is a serious one.

This situation is exacerbated by the fact that a smaller number of students means few openings for new teachers; those already employed with tenure stay on, however, and in most districts receive salary increments based on years of service. This imposes an added per-pupil cost on the school district and on the local taxpayer, at a time when State funding may be diminishing.

Ideally, State support for compensatory education programs would offset at least part of a shortfall in general aid. Yet as we all know, such programs do not exist in every State, and the extent and type of funding varies widely. Federal Title I and other monies are, of course, not fungible with funds from other sources and therefore do not generally compensate for declines in State assistance.

It is our hope that the economic problems engendered by enrollment changes will lead to a renewed and increased interest in school finance reform to eliminate inequities and provide a sufficient level of assistance to all communities. Certainly the reluctance of property taxpayers to approve proposed school budget increases should lead to a careful consideration of our present system of school finance.

In the administrative area, the problems confronting people with management responsibility are no less complex. Few district administrators have received training in management of enrollment decline, in how best to allocate staff and resources in periods of demographic change, and in how to put facilities to efficient alternate use as they become no longer needed for school programs. My office is developing an effort to assure the access of administrators to such training and to see that technical assistance in such matters is fully available.

Teachers also will require additional help through this period. As fewer entry-level people are able to come into the profession due to job shortages, we all must guard against an ossification of teaching staff currently employed. Teachers want and need continuous in-service training; we should see that it is generally available. We can do this by assuring full access to Teacher Center programs, and by assisting those administering such programs to keep their quality high.

Policy Options

Beyond taking the steps I just mentioned, I believe that the Federal government can, by following two strategies, take advantage of opportunities that enrollment decline will open.

First, we can encourage school districts to reach out to the nontraditional school age population, and to underserved people within the 5- to 18-year-old category (such as the handicapped) to expand the education constituency.

Our effort to create a universal system of lifelong learning is still in the development stage. But our ultimate goal is clear: it is an infusion of education with all aspects of adult life--vocational, civic, social, and creative. We have been well served by our adult education system. The time has now come to move beyond that to a society where people in most occupations get time off to go back to school for more training, where retired people have schooling options that relate to their interests, and where adults can develop an awareness and understanding of cultural activities now far removed from their daily lives. We can, I believe, efficiently site many programs to address those needs in empty elementary and secondary school classrooms, and thereby maintain these facilities as viable education institutions despite a declining 5- to 18-year-old population.

Secondly, we can add to the responsibilities of the already-existing school plant by using education facilities for other social service programs, such as health or recreation.

This is already being done in some communities, and the results are positive. The Congress recognized the validity of the concept in 1974, when it passed the Community Schools Act. That program has been funded at $3.553 million. There is pending legislation, sponsored in the House by Congressman Kildee and in the Senate by Human Resources Committee Chairman Williams that would dramatically increase our effort here, along the lines of the community education program recommended by the President as part of the Administration's Elementary-Secondary

Education Act reauthorization proposal. Although the Administration has no formal position on the pending legislation, Secretary Califano has indicated his support of the concept.

We believe that we must do more than transform buildings; we need to re-train teachers, train community organization members, and take a number of other steps before the concept of community schools can become a reality. We hope to assist the Congress in developing legislation to encourage and support those activities.

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As I suggested earlier, none of the problems created by demographic change are simple ones. We need to make the best possible utilization of all available expertise in these matters, from both within and outside the Federal government. We need, as well, to assure that the public receives a clear and complete picture of what is happening to elementary and secondary enrollment, and of the policy implications of enrollment change.

This committee, through these hearings and its other activities, will undoubtedly play a vital part in the development of policy and the dissemination of information. I wish to assure you that we in the Administration stand ready to help in any way we can.

TESTIMONY PREPARED FOR THE
SELECT COMMITTEE ON POPULATION
(CONGRESSMAN JAMES SCHEUER, CHAIRMAN)
REGARDING
PROJECTED NEEDS FOR CHILD CARE SERVICES IN THE 1980S

MAY 25, 1978

BY

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and

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Mr. Chairman and Members of the Committee:

Unfortunately, I am unable to address you in person today. However, I am pleased to have the opportunity to offer this statement as part of your deliberations on the implications of demographic changes in the U.S. I am co-director of the Cross-National Studies Program at the Columbia University School of Social Work. Our research covers the fields of: (a) family policy (public policy as it affects families with children); (b) social services (including child care services); and (c) the experiences of working mothers with young children. Much of it may have salience for consideration of the projected needs for child care programs in the 1980s.

There are three major points which I would like to make in this brief statement: (1) the failure, thus far, to deal with the implications of the maturing of the "baby boom" cohort; (2) the confusion in the current day care debate; and (3) projections of future needs based on current labor market trends, demographic projections, and patterns of parental preference.

1. Implications of the Maturing of the Baby Boom Cohort

Most discussions of the baby boom cohort of the late 1940s, 1950s, and early 1960s have ignored the approaching middle years of that cohort's life cycle. In other words, there has been a good deal of discussion of what it will mean for this country when the cohort reaches retirement age, from about 2015, and, therefore, when the aging population increases substantially. There has been some discussion, also, of the implications of a decline beginning in the 1980s in the size of the youth population. But except for some labor market projections and a few studies related to housing policy, no serious attention has been paid to the many other implications of this cohort entering the mid-life stage (ages 25-54) from now on. These are peak years of work and family responsibilities for both men and women. Approximately 93 percent of the adults in this age group have been married at least once and close to this percentage of women have had at least one child. About 60 percent of the women of this age are currently in the labor force.

The decade of the 1980s will see an "explosion" in the age group 25-44 in particular. These are the years that adults are most likely to be bearing children and rearing and caring for young children, while at the same time they are also most likely to be in the labor force.

I would also like to note that each decade, beginning with the 1950s, has been marked by the influence of the baby boom cohort -- from the development of a variety of baby-related industries in the 1950s to the expansion of the school systems throughout the country in the 1960s and the burgeoning of the various youth movements, and finally, to the new life styles of the 1970s with stress on one person households, "living together," and new consum services for the "young and single." One question for the 1980s is: what will be the characteristic life style of the baby boom cohort which will mark this decade?

2. Clarifying the Day Care Supply and Demand Debate

In order to make some subsequent projections about the needs for child care services, I would like now to present some current data on child care programs suggesting a pattern of use and preference that differs from the conventional day care picture. At the same time I would like to underscore the gaps in available data which still preclude more precise analysis.

The usual day care discussion takes off from one of two contradictory positions: the first begins with the assumption that about four-fifths of all American children are cared for by their mothers during the day and that, therefore, there is clearly no demand for organized child care programs. The second position is that there are about 6.5 million children under age six with working mothers (and about 13.5 million more aged 6-13 whose mothers work); there are about 1.3 million children in licensed day care centers or family day care homes (and an estimated 1.8 million in unlicensed); thus there is an enormous unmet need for such provision.

Neither of these positions is valid. Both ignore existing patterns of program use and parental preference, differential patterns for children of different ages, and major gaps in knowledge regarding children in some age groups.

More specifically: of the 9.7 million 3-5 year olds in 1976, over 49 percent (4.8 million) were enrolled in preprimary schools, either nursery school or kindergarten, representing an increase of over 50 percent during the last decade. Most of this increase is in nursery school enrollment for 3 and 4 year olds, which jumped by 120 percent since 1967 (from 14 to 31 percent). In contrast, enrollment of 5 year olds increased by about 25 percent, from 65 to 81 percent. In addition to these children in preprimary programs, another 11 percent of the 5 year olds (366,000) were attending primary school by 1976; also, of the close to 1.5 million children in center or family day care about one third also attend some type of school. In short, for many children prekindergarten and nursery classes and day care centers or family day care are "packaged" for an all-day plan. Adding up the best-estimate unduplicated count only, we get a total of nearly 6.2 million children aged 3-5 participating in some form of school or out-of-home day care program, representing about 64 percent of the age cohort. The overwhelming proportion (59 percent) are in a formal school or center program.

Clearly there is a demand for such programs. Moreover, a significant number of facilities (29 percent) cover a full day; another substantial number cover the normal school day; some mothers work part time; and some programs are used by non-working mothers.

A somewhat different picture emerges with reference to child care for children of other ages. Two other components of potential demand can be identified here: (1) care of infants and toddlers (children under the age of 3) when parents work; and (2) supplementary care for children to cover the time between the end of the normal school day, whether it is a half day or a full day, and the parents' work day.

There are no data yet available to provide even an informed guess as to the nature and extent of the demand for these types of care. Indeed, although more than 35 percent of the mothers of children under the age of 3 were in the labor force last year, and 44 percent of the children of that age (4 million) had mothers who worked at some time during the year (and two-thirds worked full time) we have very little knowledge regarding how these children were then or are now cared for. A soon-to-be-released report of a National Infant Day Care Study suggests that about 121,500 children under age 3 are in center care. An earlier national survey of parents found that 179,000 children of this age were cared for at least 30 hours per week, in centers, and 652,000 in family day care. In addition 369,000 were cared for in their own homes by a relative other than the child's own parent, or by a non-relative. None of these figures give us any real sense of how most employed parents cope with child care for this age group. Indeed one cannot fail to be astonished at how little attention is paid this question and how uncertain the facts are. None of the census reports include data on care of the "under threes" despite the knowledge that the most significant growth in the size of the labor force over the past decade is attributable to the entry into the labor force of married women with children of this age.

School is the primary child-caring institution other than the family. Yet there is similar ignorance about how children are cared for when they attend school and their parents' work day does not coincide with the school day, or when school holidays and work holidays are not the same. For those women working part time this may not present a problem, but two-thirds of all employed women do work full time. Some parents may deliberately work different shifts in order to minimize the need for special child care. Some parents might view 10 year olds and older as able to care for themselves. Regardless, we can assume that there is both need and significant demand for child care services among parents of the under-threes and parents of school-age children, at least through age 8 or 9. But thus far an accurate quantitative assessment is impossible.

3. Projections for Child Care Services for the 1980s

The labor force participation rate for women in the prime child bearing and child rearing years (25-44) is about 60 percent and is projected to reach over 70 percent by 1990. Two-thirds of these women now work full time and this pattern is not expected to change. Since 1970 the greatest labor force increases have occurred among married women under age 35, with preschool children (and particularly those with children under age 3). Furthermore, for the first time there has been no significant decrease in labor force participation rates of women aged 25-29, the years women have traditionally withdrawn from the labor force in order to cope with child rearing. Increasingly, women, like men, are entering the labor force and remaining in, withdrawing, if at all, only very briefly around childbirth. Projected marriage rates, birth rates, and labor force participation rates all suggest that the baby boom cohort in the 1980s will have been married at least once, will have two children, and, most important, both parents -- or the sole parent -- will be working in paid employment outside the home. The cohort of preschool aged children will grow, as will the numbers of children with working mothers. How we will cope with this demand remains to be seen.

Current preference and use patterns -- for both working and non-working mothers -- suggest expansion of preprimary school programs in the public sector for children from about age 2 or 3 through age 5, following the existing pattern in such countries as France and Belgium.

Data are inadequate to provide any precise assessment of need or parental preference for children under the age of 3, or for after school programs to supplement the school day for working parents. It seems highly probable that a demand for paid maternity leaves lasting for at least 3 or 4 months following childbirth will increase. Once again, this is the existing pattern in every major industrialized country other than the U.S.

I would urge that your committee address itself to the following questions:

1. Can we in the U.S. begin to reject the historical and artificial dichotomy between day care and preprimary school programs and can we acknowledge the interest that most parents have in a group experience for children aged 3-5?

2. Are we ready to pay more serious attention to the growing numbers of very young children whose mothers are working during the day, and explore how, indeed, they are now being cared for -- and what would be a sound policy?*

3. Is this not the time to identify how preprimary and primary school children are cared for now between school hours and the close of the parents' work day, and begin to consider alternative options for such care?

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*Our current research, funded by the German Marshall Fund of the United States, is in its final phases and will be dealing with the consequences of various policy options -- as experienced in six countries which have made different choices.

The Impact of Enrollment Trends on the Role of State Coordinating Boards*

by

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*The author wishes to thank Mr. Claudio Prieto and Mr. Paul Wing for their contributions in the preparation of this paper.

College presidents throughout the country have become interested in demography, admissions strategies, and public policies concerning institutions in financial difficulty.[1] The prospect of enrollment decline is widely accepted, though educators continue to refer to the possibility with the more delicate term, "enrollment stability."

The paper argues that enrollment declines are likely to be experienced by a high proportion of institutions in a number of states. It discusses several roles that state agencies can play in disseminating enrollment projections for individual institutions, identifies one promising approach to identifying institutions headed for trouble, suggests state policies for easing institutional transition from expansion to decline, and traces some of New York State's experiences during these last several years.

Stability On Decline

Enrollment stability through 1985 has been projected both by Cathy Henderson[2] in the American Council Study and by the Carnegie Council.[3] The Carnegie Council study projects enrollment growth from 8.4 m. students in 1980 to 8.6 m. students in 1985, with a slight decline to 8.2 m. students in 1990.[4] Renewed growth is projected to the end of the century. Based upon an expected decline in the eighteen year-old population, Ms.

Henderson projects a modest 4.4% decline in the freshmen enrollments of traditional college-age students in the decade 1975 to 1985.[5] Stephen Dresch offers the most pessimistic outlook, arguing that the continuing high levels of college attendance will create a condition of "economic saturation."[6] He projects sharp declines in the mid-1980's extending for an additional decade through the mid-1990's.

Enrollment stability may be too optimistic a term to describe the enrollment outlook.

The Bureau of the Census projects that the number of eighteen year-olds will decline from 4.2 m in 1975 to 3.6 m in 1985 and a further decline to 3.2 m in 1992.[7] The decline between 1975 and 1985 is about 15%, but between 1975 and 1992, it is 24%. These declines are based upon the number of children already born. The most pessimistic estimate projected for 1995 is for 3.0 m eighteen year-olds, a decline of 30% from 1975.[8] Enrollment stablility will occur only if there are compensating increases in the college-going rate of the college-age cohort or increased college attendance by adult populations.

The demand for higher education and the proportion of the age cohort continuing on to college is difficult to predict. Both New York and New Jersey have experienced declines in "college-going" rates since 1971.[9] A Carnegie Commission study identified a strong decline in the proportion of white 18-19 year old males going on to college, from 47.[illegible] in 1969 to 39.6% in 1972.[10] Freeman reports a drop among male 18- to 19-year old male civilians from 44% in 1969 to 33% in 1974.[11] Freeman explains the reduction on the basis of a decline in the rate of return for investment in higher education, from 11-12 percent in 1969 to 7-8 percent in 1974.[12]

High unemployment rates, growing underemployment of college graduates, employment of college graduates in areas unrelated to their major fields of study could continue to discourage college attendance. The number of college graduates seeking employment is expected to increase for the next five years; unless unemployment opportunities rise, or the real cost of higher education declines, there is little reason to expect a significant reversal of the downward drift in the college-going rate in the next five years.

On the other hand, the number of older students enrolled in colleges and institutions has risen significantly between 1970 and 1975.[13] Yet, the American Council on Education study points out that ninety-four percent of all first-time full-time enrollments were under twenty years of age.[14] While institutions may seek to encourage the enrollment of older students, they face competition from school districts, public agencies, professional associations, industry as well as other colleges that now serve adult populations. The impact of population changes and consequently enrollment declines will vary significantly from region to region. The Henderson study points out that "...two-thirds of all freshman are enrolled in states...which are not projected to experience overall reductions in the number of 18-year-olds by 1985."[15] Nine states with expected declines account for 28 percent of total enrollment. The independent college sector is especially vulnerable. Over 40 percent of enrollment at independent colleges are within states expected to lose enrollments, compared to 28 percent of the enrollment in public institutions.

These data suggest that the pessimists, myself among them, tend to be located in states that (1) now enjoy high college-going rates, (2) presently enroll a large number of non-traditional students, (3) already provide open access and enroll previously underserved ethnic groups, (4) are located in an area of the country facing larger than average enrollment declines, (5) have a significant number of undergraduate liberal arts colleges, and (6) have a relatively large number of independent institutions.

New York is one such state and projected enrollments are for substantial declines beginning in 1981 and continuing into the mid-1990's. New estimates for New York State project a decline of 55,000 students between 1976 and 1985 (slightly over 10%) and a decline of 125,000 full-time students (about 25%) between 1976 and 1995.[16]

Whatever the overall trends, enrollment declines are likely to be significant for wide segments of the academic community.

Projection of Enrollments for Individual Institutions and Their Impact on Institutional Behavior

What is the likely impact of overall enrollment declines upon individual institutions?

Early in 1974, the New York State Education Department, as part of its statewide planning effort, developed an enrollment projection model that predicted enrollments for each college and university in the state through 1990 basis upon their then existing missions and the state's financing policies.[17] Each institution's enrollments were projected by estimating its enrollment share of the expected number of high school graduates from each region of the state and from out-of-state. The enrollment share were estimated on the basis of "drawing power" for the preceding five-year period (1969-1973).

Institutions were then grouped into five categories. Group V includes institutions that were expected to continue to maintain stable enrollments or slight growth. Institutions were classified into Group V, if they accepted a small proportion of their applicants, drew 25% or more of their full-time undergraduates from outside of the state and at least one-half of their freshmen from outside of the region in which the institution was located. The assumption was made that Group V institutions could and would maintain their enrollments by adjusting admissions requirements to maintain stable enrollments. Forty-four out of 187 institutions were expected to decline by 10% or less.

The other 143 institutions were assumed to share the remaining pool of applicants. Projections for these institutions are shown in Table 1.

The following conclusions were drawn:

-- Institutions with expected enrollment declines of 40% or more include small public and independent institutions that together enrolled only 10% of the undergraduate population. The 20 independent institutions were small liberal arts colleges, that had experienced severe decline since 1969. They were not expected to survive.

-- Institutions enrolling one out of two full-time undergraduates in the state fell into the 20% - 39.9% range for enrollment decline. Half of the

TABLE 1

Summary of Predicted Enrollment Declines of Full-Time Undergraduates at 143 Institutions in New York State, 1973-1990

Enrollment Decline of	Number of Institutions		
	Public	Independent	Total
40% or Greater	5	20	25
30% to 39.9%	16	27	43
20% to 29.9%	16	29	45
10% to 19.9%	22	8	30
Less than 10%	16	28	44
Totals	75	112	187

Source: T. Edward Hollander, Planning for Changing Demographic Trends in Public and Private Institutions, Unpublished Manuscript, March 1975. A published version (table excluded) appears in Assuring Academic Progress Without Growth (Alan Carter, ed.) San Francisco: Jossey-Bass, 1975, pp. 1-12.

state's independent institutions fell within these two categories. Most of the public two-year colleges also fell within this range of decline.

-- Independent colleges were most likely to suffer severe enrollment losses. Almost three out of four independent institutions were expected to experience enrollment declines of 20% or more compared to one out of two public institutions.

The projections were shared with all of the institutions in the state together with a detailed description of the methodology so that they could replicate the study. Those institutions that challenged the findings did so on the basis that they planned to change their recruitment and educational strategies in order to avoid the forecasted decline.

The results of dissemination of the study influenced institutional plans and behavior. Institutions responded in different ways.

-- Several institutions shifted the emphasis in their educational programs from those designed to serve college-age undergraduates to program designed to serve non-traditional age populations.

Examples of such institutions are Mercy College, the College of New Rochelle, New York Institute of Technology and Adelphi University.

-- Extension and outreach centers were developed by institutions that had not done so before.

- -- Adult and continuing education programs were offered by institutions for the first time.
- -- Recruitment and admissions functions received greater support and emphasis within the institutions.
- -- Small liberal arts colleges began professional and career programs and other institutions concentrated resources in expanding their programs. The competition for students increased in intensity and promotional advertising became common.

Some of the efforts have been constructive, others, discussed below, tended to reflect on the credibility of higher education in the state.

The state's overall enrollment pattern has followed these intital projections fairly closely. For individual institutions, however, these projections are not likely to be realized. A number of institutions have responded as noted above to expand the constituencies they serve. Several institutions already have closed and their enrollments have been redistributed within the system. Several consolidations have also taken place. The publication of these data also has resulted in changes in overall financing and planning policies that will alter the outcome from the projected model.

The point is that the state coordinating board can play a catalytic role simply by providing institutions with adequate information about possible future trends and directions. Many, though not all institutions, if provided with adequate and credible data, can respond with modified strategies and programs, that is, if they have confidence in the information available. Fear for institutional survival is one of the most powerful change-agents around.

Predicting Individual Institutions Headed for Trouble

Some institutions with sufficent lead time can explore alternative arrangements to accommodate to decline if that is their likely future. If they fail, and many may, plans can be developed for the orderly dissolution of the institution and the relocation of its students to other institutions.

Thus, the New York State Education Department has undertaken a project to identify more precisely institutions in difficulty or heading for difficulty so that it can intervene early enough to take effective steps for maintaining an institution's viability or protecting the students should the institution fail.

An initial effort to identify vulnerable institutions was based upon the Carnegie Commission's indicators of strength.[18] The Education Department has identified several additional measures of strength, based upon its experience.

An institution least vulnerable to enrollment decline shows the following characteristics:

-- attract all ages, rather than 18-21 year olds.

-- provide for significant part-time enrollments.

-- is co-educational.

-- qualifies for state support.

-- is located in an urban rather than a rural area.

-- depends to a lesser rather than to a greater degree, upon tuition income.

-- operates at or near its planned capacity.

These characteristics have been used to identify institutions within the total number that need to be monitored less intensively. These criteria, by and large, have been useful as an initial screen of institutional strength. The institutions found to be most vulnerable to enrollment decline are small, rural independent liberal arts colleges, especially women's institutions, charging high tuition and operating significantly below capacity.

A second phase of the department's efforts is the attempt to develop lead indicators that could be used to identify individual institutions headed for difficulty. Financed, in part by a grant from the Ford Foundation, the study uses extensive profile data accumulated for each institution on applicants, acceptances, enrollments, fiscal measures, debt service, tuition levels and space utilization. The study will attempt to identify measures that lead actual enrollment declines and/or predict operating deficits. Department staff members, now review the profiles periodically to identify institutions for special monitoring and management assistance.

The impact of overall enrollment changes on individual institutions is difficult to predict. Enrollment declines do not fall proportionately on all institutions within a system. Further, there is no reason to believe that the academically strong institutions will survive while the academically weak ones will absorb the full brunt of an enrollment decline. In fact, the academically strong institutions may be competing with similar institutions for a given applicant pool on a regional or national basis. Declines in that applicant pool do not necessarily mean that the institution can or will shift its educational and admissions efforts to serve a different applicant pool.

Experience on the impact of enrollment declines between 1971 and 1975 in New York State suggests that overall enrollment declines tend to effect a limited number of institutions, while others maintain stable enrollments or even grow. In an effort to measure and be able to predict how enrollment declines are distributed, the department staff is now examining measures of "selectivity" and "yield."

Defining "selectivity" as the ratio of acceptance to applications and "yield" as the ratio of first-time full-time enrollments to acceptances, the following information can be developed and analyzed.

-- Institutional selectivity and drawing power among sectors and within sectors can be measured by the relationship between these variables.

-- Institutional vulnerability to enrollment declines can be measured assuming the least vulnerable institutions are highly selective and attract a high proportion of students they accept. Institutions with low "selectivity" and low "yield" would be expected to absorb the major share of a subsequent enrollment decline.

-- Institutional admissions patterns can be followed over a longer period of time to identify institutional response as enrollments change, providing a basis for projecting future enrollments.

In a preliminary exercise to test this approach, Paul Wing devised a matrix measuring "selectivity" and "yield."[19] Institutions were then classified along both axes as high, medium and low for each variable, with one-third of the institutions identified in each group. The theoretical matrix is presented in Table 2.

Table 2

Theoretical Matrix of "Selectivity" and "Yield"

Selectivity → Low

High ↑ Yield

(Matriculations/Acceptances)

	H_s	M_s	L_s
H_y	H,H Prestige Institutions	M,H	L,H Attractive Open Adm. Institutions
M_y	H,M	M,M	
L_y	H,L Prestige Institutions in Transition	M,L	L,L Institutions in Potential Trouble

(Acceptances/Applications)

New York institutions, public and independent, were distributed within the matrix with this result:

Table 3

Matrix of "Selectivity" and "Yield"

of 202 New York State Institutions

Fall, 1976

Selectivity → Low

High ↑ Yield

	Hs	Ms	Ls	Total
H_y	26(13%)	18(9%)	24(12%)	68(34%)
M_y	14(7%)	29(14%)	23(11%)	66(32%)
L_y	29(14%)	23(11%)	16(8%)	68(34%)
Total	69(34%)	70(35%)	63(31%)	202(100%)

The matrix shows that the interplay of student demand and institutional offers define 13% of the state's institutions of higher education as selective and competitive (high yield). On the other hand, roughly 8% appear to be non-selective, and not too competitive.

The distribution combines widely diverse undergraduate institutions, ranging from degree-granting proprietory institutions to major multi-universities, under varying forms of governance. A differentiated scattergram (not shown) based upon governance disclosed:

-- The State University is a diversified system with above average selectivity.

-- The City University is a non-selective system, below average in competitiveness.

-- The proprietory institutions are non-selective, but they attract a high proportion of applicants offered admission.

-- The independent institutions as a sector overlap the other groupings.

The scatter diagram approach would be most useful in identifying clusters of institutions with common admissions policies.

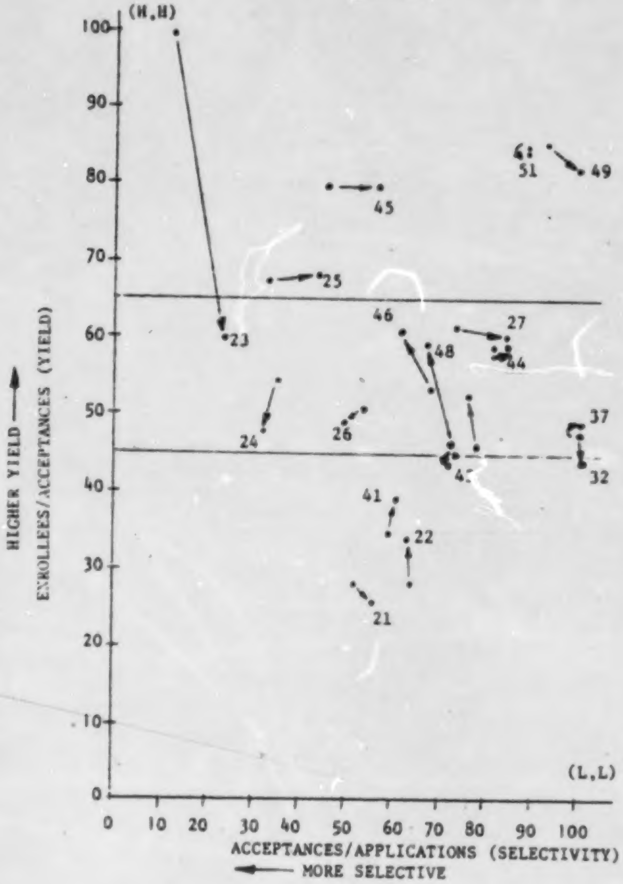
The analysis of shifts of individual institutions or selective groups of institutions over a longer period of time is more meaningful. It could serve to identify institutions headed for trouble.

Wing developed a two-year series to show the technique involved. A longer period of mapping is needed if this technique is to have predictive power. The diagrammatic portrayal of shifts between 1975 and 1976 in "selectivity" and "yield" (Illustration I), shows:

-- Lower "selectivity" by the independent seminaries, and State University's four-year and two-year colleges. "Yield" remains unchanged.

Illustration I

Changes in Admissions Patterns for Major Institutional Categories in New York State, 1975 to 1976



KEY

SUNY
21 University Centers
22 University Colleges
23 Health Sciences Centers
24 Specialized Colleges
25 Statutory Colleges
26 Ag & Tech Colleges
27 Community Colleges
CUNY
32 Senior Colleges
37 Community Colleges

INDEPENDENT
41 Multiversities
42 Universities
43 College Complexes
44 Colleges
45 Specialized Colleges
46 Health Sciences Centers
47 Nursing Schools
48 Engineering and Technical Schools
49 Seminaries
PROPRIETARY
51 Proprietary

- -- Lower yields for the SUNY Health Science Centers and the SUNY specialized colleges.
- -- Increased "selectivity" and "yield" by the independent Health Science Centers and engineering and technical schools.
- -- Increased "yield" for the independent multi-universities and universities with a slight increase in selectivity.
- -- A decline in "yield" for the CUNY senior colleges and a slight increase in "yield" for the CUNY two-year colleges.

The efforts to project enrollments and develop lead indicators to identify institutions in difficulty or headed for difficulty are important services a state coordinating board can offer to assist institutions to understand the implications of overall enrollment declines for their own planning.

Uncoordinated Competition for Students: A New Pressure for Coordinating Boards

Coordinating Boards are likely to be called upon to develop measures to maintain cooperation among institutions. Uncontrolled and uncoordinated, the increased competition for students poses serious threats to the credibility of higher education and the consequent ability to maintain public confidence and public support.

A growing number of examples have been found of colleges and universities adopting a new "hucksterism" in an attempt to maintain or expand their enrollments. Misleading catalogues, promotional advertising, and promises of placement have been used by some hard-pressed colleges in an attempt to lure students. A number of cases have been identified of institutions awarding excessive credits for course work, recognizing life experience for credit when it is not justified, and reducing program requirements in order to attract students. A number of programs marching under the non-traditional banner on close examination seem to be nothing more than "credentialling" arrangements designed to meet enrollment goals and budgeted tuition revenues. Large numbers of institutions have developed extension programs at sites far removed from their home campuses and offered through a local administrator not employed by the college. A cynical observer might comment that "franchising" has finally come to higher education.

Increased competition poses another threat. It can increase conflict between secondary and post-secondary schools as each system seeks to offset enrollment declines by extending the age group of the constituency it serves. Conflict has occurred in a number of states over the distribution of vocational education funds, early admissions practices, and in the competition for funds to support adult education.

Finally, the competition within the higher education community has strained relations within the public sector as each institution seeks to maintain its enrollments through expanded recruitment in areas served by other public instituitions.

Universities have reduced admissions criteria seeking to attract students normally in the applicant pool for four-year colleges. Four-year colleges, in turn, have recruited students now enrolled in two-year colleges or who would normally be part of the applicant pool for two-year colleges.

Public and independent institutions in a number of states are engaged in bitter public conflict for state-support funds.

Another emerging danger is unplanned expansion of program offerings by some institutions beyond their program competence and with limited resources in an attempt to capture a larger pool of applicants.

The simultaneous expansion of all institutions into the same program areas or to serve the same non-traditional constituencies could weaken academic effectiveness by stretching each institution's resources over more diverse areas. Unless enrollments do expand, the institution's academic and fiscal strength is likely to be weakened. During the last five years, many colleges expanded program offerings in an effort to maintain enrollments without eliminating programs of declining demand.

In such cases institutional resources are spread thin, institutions can no longer maintain specialized strengths and programs proliferate to the mutual disadvantage of all students.

These problems are likely to grow as the competition for students increase. Inevitably they bring discredit to the higher education community and increase adversely our ability to maintain public confidence and support.

It may be the institutions once fearful of coordinating boards may find in them an alternative that is less objectionable to the chaos and more pernicious government intervention that is likely to result from open conflict within the education community. Whatever the agent, mechanisms are needed to:

-- Maintain minimum standards for program offerings, monitor promotional advertising, and assure adequate information is provided for informed student choice.

-- Define boundaries and operating practices with respect to the roles of secondary schools, vocational schools and colleges and universities in serving adult and other non-traditional students as well as college-age students.

-- Define more precisely the respective roles of public and independent institutions within the statewide system and provide for resolution of conflict among institutions.

-- Establish standards and approval arrangements both for branch campuses and extension centers.

-- Help establish consensus within the higher education community on budgetary and financing proposals or develop a common budgetary and legislative program for submission to the Governor and the Legislature.

Role of the State in Periods of Enrollment Decline

State policies can ease the transition from enrollment growth to enrollment stability or decline.

A number of steps can be taken to increase the demand for postsecondary education by increasing access. The broadest approach is the establishment of a state need-based student-aid program, especially for segments of the populations who are underrepresented because of economic barriers. Special programs such as educational opportunity programs can be more specifically directed at underrepresented populations. Evaluation of non-collegiate programs for possible college credit and expanded use of credit-by-examination can encourage increased numbers of adults to return to college. Special programs developed, jointly with or for industry, professional associations, labor unions, and public agencies could encourage special constituent adult groups to return to college. Student aid for part-time students could be expanded. Better information for students and simplified student-aid procedures are long overdue in all states.

States that now lose large numbers of students to institutions in other states can take steps to reduce the outmigration of students through more generous student aid arrangements for in-state study and by strengthening the quality of their educational offerings.

Both New York's present and New Jersey's proposed student-aid programs effectively reduce the cost of in-state study for state residents by requiring attendance in-state for maximum student-aid support.

State policy can be a major factor in determining whether public institutions or publicly funded independent institutions can use a period of stability to strengthen existing programs. Most funding formulas for public institutions and state subsidy arrangements for independent institutions are enrollment-driven. Institutions are under pressure to grow in order to qualify for increased public funds.

In states that anticipate overall enrollment declines, state agencies in collaboration with institutions, should seek changes in financing arrangments away from enrollment-driven models. Alternative arrangements that should be explored include reductions in budgeted enrollments and transfer of funds to support of existing or promising program areas, development of formulas for budget reductions based on variable costs, and development of cost-driven or program-driven models.

Statewide planning for the expansion of higher education served higher education needs well during expansion. It is essential during stability and decline. A well-coordinated planning system involving institutional participation can establish a rational framework for institutional planning. If the process is well conceived, it can serve to define institutional missions more precisely and assure higher education needs are met with minimum inter-institutional and inter-sector conflict. Strengthened coordinating arrangements can complement planning efforts.

Institutional academic and fiscal planning will be difficult unless there is a well-defined and understood system for public financing of higher education. While it is unlikely that states would abandon the annual budgetary process or forward fund higher institutions, states can adopt system-wide policies for financing. Principles can be adopted that guide institutional subsidy levels, tuition charges, and student aid to provide institutions with a basis for long-term fiscal planning. The Regents in New York have developed a set of coordinated principles that guides their annual fiscal proposals.[20] While state legislatures are not likely to adopt definitive formulas, state coordinating boards can use them in the annual budget review.

Some Applications in New York State

New York is an interesting example of the changes in public policy that could result after there is widespread acceptance that future substantial enrollment declines are likely to occur and that state policy can influence the educational viability of the statewide system.

One early response by the Regents and the Legislature was the overhaul of the state's tuition assistance program. The new program, adopted in 1974, expanded access for low income students to all institutions, public and independent. The generous aid program now funded at over $200 million annually provides higher award levels for students attending independent institutions. Public sector support for the program reduces considerably the tension that had been growing between the sectors as enrollments shifted from the independent to the public sector.

The new aid program contributed, in part, to the stabilization of enrollments in the independent sector in 1974 and 1975 arresting a five-year enrollment decline. In Fall, 1976, the independent sector's share of total undergraduate enrollments rose for the first time in recent history.

A second outcome of the wide acceptance of the possibility of enrollment declines was the establishment by the Regents of a special commission on the financial problems of institutions in financial difficulty. Nathan Pusey former president of Harvard University chaired the Commission. Its report, issued in September, 1975, recommended "a State policy that permits institutions, public or private to compete under state financing policies based on fair rules of the game as they seek to attract students and serve public needs... It would mean, for example, that no special state aid be granted to any institution from any source, or any authority, unless all institutions are given opportunity to present their problems and apply for such aid."

While calling for even-hand state financial policies that would permit all institutions to compete effectively for students within a coordinated statewide system, the Commission's recommendations also sought to minimize special state intervention to aid failing institutions. In order to limit political intervention to the extent possible, the Report recommended that the Commissioner of Education establish formal procedures for investigation into the affairs of an individual institution which has severe financial problems. It further provided for convening an outside group of experts if necessary, to investigate and make recommendations on institutions in difficulty. The use of the outside panel was designed to limit political intervention. Among the other recommendations, the Report called for procedures for the orderly closure of ineffective and unneeded institutions. The Regents accepted the principal recommendations in the Report.

It is fair to say that the Regents, the higher education community, and most public officials agree that the statewide system should be permitted to contract as enrollments decline. They reject the alternative that the state should intervene with special financial aid in an attempt to maintain the existing overbuilt system. Subsequently, this policy has been tested in a number of cases with mixed results. Several independent colleges have been permitted to close. However, the Governor and key legislators did succeed in appropriating special state aid in support of one politically influential institution.

The policy has been more difficult to implement in the public sector. In attempting to resolve City University's fiscal crisis, the Board of Higher Education proposed the merger of three existing institutions and the reclassification of two four-year colleges to two-year status. The Legislature overruled the Board's recommendations. After the smoke cleared, one merger was accomplished and one four-year college was reclassified to two-year status.

The Regents and the higher education community continue to believe that selective closures based in large measure on student choice is an educationally sound strategy for accommodating expected declines.

A third outcome of the widespread acceptance of enrollment declines was the voluntary reductions by the State University of New York in its enrollment goals and construction programs. The State University of New York has adopted enrollment ceilings for most of its four-year colleges at or near present enrollment levels. Similarly, but also as a result of fiscal exigency, the City University has sharply reduced its enrollment goals. Both systems will maintain open access for high school graduates through the community colleges.

Fourth, the Regents have adopted new and tough standards for program approval designed both to assure that existing programs meet high expectations for quality and to control shoddy program offerings developed to expand enrollments. Tougher standards for program approval also will limit unnecessary program proliferation.

A fifth outcome of concern for possible enrollment decline is the recent effort within the higher education community to achieve consensus on some basic principles for public financing of higher education. The effort, undertaken cooperatively through the Association of Colleges and Universities of New York and supported by the Department of Education and the Regents, seeks to minimize potential conflict across sector lines and assure a well-defined public policy that will facilitate planning by individual institutions. Agreement has been reached on the need to define financing programs to maintain the present enrollment balance between the public and independent sectors. The college community will attempt to reach agreement on a fiscal plan for presentation to the Governor and the Legislature that will maintain the relative shares of public and independent institutions.

The last point deserves special emphasis. If the leadership of the academic community, across sector lines, is able to define, propose and jointly support financing and coordinating arrangements, higher institutions will be able to gain maximum political support. Such an agreement is the most effective response to potential crisis, a divided system invites decreases in public support. The challenge to achieve unity is well understood, but a consensus across sector lines has yet to be reached.

Conclusions

While stable enrollments may characterize future enrollment patterns for many institutions in most states, individual institutions and some states are likely to experience sharp enrollment declines of traditional college age students. Until there is clearer evidence that the college-going rate will increase significantly, all states and institutions would do well to develop contingency plans based upon assumptions of reduced enrollments beyond 1981.

Opportunities for extending access to non-traditional populations through further reductions in economic and educational barriers to post-secondary education exist for many individual institutions and in some states. Even so, there is reason to doubt that these possibilities will alter significantly the outlook for most institutions especially in states facing enrollment declines.

Coordinating boards can play a constructive role in collecting, analyzing and monitoring demographic and enrollment data for the higher education community. The boards can serve important functions in monitoring institutional practices, establishing processes for orderly contraction, facilitating the development of a well-defined and coherent public policy for financing higher education and maintaining public confidence in support of the statewide systems.

In states facing enrollment declines, the role and authority of coordinating boards is likely to increase, very likely with the support of the higher education community. This enhanced role will be welcome if coordinating boards are supportive of the statewide system.

Footnotes

1. The theme for this meeting and the increased attention in the literature to enrollments, fiscal stability and planning reflect interest in this area.
2. Cathy, Henderson; *Changes in Enrollment by 1985* (Policy Analysis Service Reports. Vol. 3, No. 1.) Washington, D.C.: American Council on Education, June, 1977.
3. Carnegie Council, *More Than Survival* (San Francisco: Jossey-Bass, 1975).
4. Carnegie Council, *Op. cit.,* p. 45.
5. Cathy, Henderson, *Op. cit.,* p. 19.
6. Stephen P. Dresch, "Educational Saturation: A Demographic Education Model," *AAUP Bulletin*, (Autumn, 1975), pp. 239-47.
7. U.S. Bureau of the Census, *Current Population* Reports, Series P-25, Nos. 519 and 601 as cited in C. Henderson, *Op. cit.,* p. 12.
8. Based on continuation of the most recent evidence of a fertility rate of 1.7. However, the expectation is that the fertility rate could rise to 2.1. If it does by 1977, then the number of 18 year-olds for 1995 is expected to reach 3.5 m. a number close to the 1985 level. See Leon F. Bouvier, *U.S. Population in 2,000 -- Zero Growth or Not*. (Washington, D.C.: Population Reference Bureau, Vol. 30, No. 5), pp. 18-20.
9. The College-going rate in New York declined from 65.6% in 1971 to 63.2% in 1975 (*The Regents Statewide Plan*, Albany, NY: New York State Education Department, 1976. p. 15). In New Jersey, the proportion of high school graduates who are college bound dropped from 58% in 1971 to an estimated 54% in 1974 (*Department of Higher Education Data Briefs*, No. 11, August, 1975, p.1).

10. Carnegie Commission on Higher Education *Priorities for Action. Final Report of the Carnegie Commission on Higher Education*, 1973, Table A-2.

11. Richard B. Freeman, *The Over-Educated American* (New York: Academic Press, 1976), p. 34.

12. Richard Freeman and J. Herbert Holloman, "The Declining Value of College Going," *Change* (September, 1975), p. 25.

13. In 1970, 410 thousand persons, aged 30-34 enrolled in college. By 1975, the number had risen to 853 thousand. U. S. Bureau of the Census, *School Enrollment -- Social and Economic Characteristics of Students: October 1975* (Series P-20, No. 303, December, 1976, p.4).

14. Cathy Henderson, *Op. cit.*, p. 7.

15. *Ibid.*, pp. 5-6.

16. New estimates for New York State prepared recently (March 1977) for presentation to the Board of Regents. Preliminary data were obtained from the Office of Postsecondary Research, Information Systems and Institutional Aid.

17. T. Edward Hollander, *Op. cit.*, pp. 1-12

18. Carnegie Council, *More Than Survival* (San Francisco: Jossey-Bass, 1975), p. 81.

19. Paul Wing, New York State Department of Education, unpublished study, August, 1977.

20. The Regents Statewide Plan for the Development of Postsecondary Education (Albany, NY: The New York State Education Department, 1976), pp. 110-124.

Testimony by

Dr. Joseph M. Cronin

Superintendent of Education

State of Illinois

Presented to the Select Committee on Population

May 25, 1978

In 1972, public school enrollment in Illinois reached a peak of 2,373,659. Each of the twenty-seven years following World War II had been more productive than the last for Illinois parents. Babies whose entrance into the world had been postponed by the war were being born to families enjoying new prosperity. Three children were almost a prerequisite to life in the suburbs. And, in 1959 the number of live births in Illinois hit an all time high of 239,871.

Ten years ago, had we asked where have all the children gone?: -- the answer surely would have been--"To the newly constructed school down the block." Illinois school districts, as did tens of thousands of districts throughout the country, met the challenge of the baby boom and the decade of the late fifties and sixties saw a classroom boom as well.

When the school doors opened for the 1974-1975 school year, 2,281,889 students walked through. A very large number, indeed, but 91,770 fewer students than had entered those same doors three years before.

Where had all the children gone?

Well, some of them had migrated out of state with the estimated 289,000 residents who left Illinois. And, while this number is relatively small, it did contribute to the 1972-1975 decline.

We hypothesized that pupil transfers to non-public schools might have accounted in part, for the decline; but, from 1965-1975 the proportion of children in public elementary school increased from 75.7 percent to 84.2 percent while the portion attending non-public schools decreased from 24.3 percent to 15.8 percent.

Some of the children had dropped out. Unfortunately drop-out rates had increased from 5.8 percent in 1970-1971 to 6.6 percent in 1973-1974.

But, all of these factors combined did not explain where all the children had gone.

The simple explanation is that the children were not there in the first place and will not be there for the next ten years. The zero population growth movement, access to birth control and birth control information, the decision of couples to postpone having children and then to have fewer than three children or no children at all has dramatically affected school enrollments.

Ten years from now, if the projections calculated by the Research Section of the Illinois Office of Education hold true, and many believe they will, almost 500,000 fewer students will be enrolled in the public schools of Illinois than will enroll during the peak year of 1971-1972. The classrooms constructed to contain the baby boom will hold 20% fewer students as the following chart indicates.

ILLINOIS FALL PUBLIC SCHOOL ENROLLMENT PROJECTIONS

School Year	Elementary (K-8) Enrollment	Secondary Enrollment	Total Enrollment	Annual Change From Preceding Year	Change From Peak Year: 1971-72	% Change From Peak Year: 1971-72
1970-71	1,684,132	668,654	2,352,786			
1971-72	1,678,517	695,142	2,373,659	+20,873		
1972-73	1,643,486	704,036	2,347,521	-26,138	-26,138	- 1.1%
1973-74	1,600,486	711,311	2,311,797	-35,724	-61,862	- 2.6%
1974-75	1,562,719	719,170	2,281,889	-29,908	-91,770	- 3.9%
1975-76	1,529,345	726,991	2,256,336	-25,553	-117,323	- 4.9%
1976-77	1,495,716	728,048	2,223,764	-32,572	-149,895	- 6.3%
1977-78	1,449,798	717,656	2,167,454	-56,310	-206,205	- 8.7%
			PROJECTIONS			
1978-79	1,403,793	706,057	2,109,850	-57,604	-263,809	-11.1%
1979-80	1,369,391	683,678	2,053,069	-56,781	-320,590	-13.5%
1980-81	1,343,774	661,135	2,004,909	-48,160	-368,750	-15.5%
1981-82	1,323,445	638,637	1,962,082	-42,827	-411,577	-17.3%
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1982-83	1,307,000	616,251	1,924,000	-38,082	-450,000	-18.9%
1983-84	1,292,000	606,706	1,899,000	-25,000	-475,000	-20.0%
1984-85	1,271,000	609,108	1,880,000	-19,000	-493,000	-20.8%
1985-86	1,261,000	609,474	1,871,000	- 9,000	-503,000	-21.2%
1986-87	1,268,000	597,575	1,865,000	- 6,000	-509,000	-21.4%
1987-88	1,284,000	576,957	1,861,000	- 4,000	-513,000	-21.6%
1988-89	1,302,000	549,002	1,851,000	-10,000	-522,000	-22.0%
1989-90	1,323,000	528,881	1,852,000	+ 1,000	-521,000	-22.0%
1990-91	1,346,000	522,809	1,869,000	+17,000	-505,000	-21.3%

Note: Enrollment projections above the broken line are based upon actual live births while enrollment projections below the broken line are based upon projected live births and rounded to the nearest thousand after all calculations were performed.

* These projections were prepared by the Research Section of the Illinois Office of Education and include special education enrollments. Information concerning the projection methodology can be obtained from Research Section, Illinois Office of Education, 100 North First Street, Springfield, Illinois 62777.

As enrollments continue to decline, school districts face many problems. Though the number of pupils (on which state aid claims are based) decline along with the amount of state money, the cost of school operations and maintenance does not. Fiscal constraints along with fewer students and possible program reductions are causing the release of staff and attendant problems. Schools, some built as late as 1960, do not have enough students to fill them.

Long range planning is needed to help the schools face the resource and space utilization problems of the next decade.

Only lately has NIE cranked out the material so badly needed by educators to cope with this issue. Even the United States Census Bureau did not give educators the statistics they needed. Therefore, we as educators have had to do the work ourselves in order to face this tremendous problem. In Illinois we developed a Task Force on Declining Enrollments in response to the need for more information about the process of planning and management in the public school system during this period of decline.

But as well as presenting challenges, declining enrollments also offer us opportunities--to reduce class size, to undertake long needed curricular review, to provide learning resource center, to eliminate double shifts of students, to reinstate art and music programs - and, the opportunity, to open the schools to the typically unserved, provider of education--the adult taxpayer.

In 1973, with 11.2 million people, Illinois ranked fifth among the states in population. Yet, according to the NEA Ranking of the States, Illinois ranked only 30th among states for the number of residents 25 years or older possessing more than a high school education. The average education of an Illinoisan is 12.1 years. Over three million adults lack a high school diploma and over 70,000 Illinoisans 25 years or older have had no formal schooling at all. It is estimated that there are approximately 200,000 adult illiterates in Illinois and 46,000 students dropped out of school.

Yet, in 1974 over 100,000 adults enrolled in classes fully or partially funded by the Illinois Office of Education; and, over 22,000 took the G.E.D. high school equivalency test. Another 200,000 Illinois residents received instruction by correspondence from over 198 private business and vocational schools authorized to operate in the State in courses ranging from refrigeration to interior decorating to drafting.

Both the need and desire for more and better programs for adults is evident in the above statistics. We may soon have the opportunity to open the schools for day-time adult education classes--for English as a foreign language and for foreign languages, for history, for literature, for the arts, for the technical skills - for a wide range of program offerings not generally available to our adult population in current night time adult education classes.

As suggested by the Task Force on Declining Enrollments our empty classrooms can become local historical centers, cultural centers for art, music and drama. They can become centers for senior citizen activities, for hot lunch programs - they can become community education centers.

All of this activity however hinges on several very important propositions. We must have the resources, both financial and personal, necessary for the long range planning, and establishment of such programs; and, we must have the support of the taxpayer--the beneficiary of such programs.

I believe that education does not and must not stop when a person reaches 18, but also I believe taxpayers will not vote the funds necessary to keep empty schools open unless we can assure them of relevant, cost-effective programs that will benefit them.

The Illinois Office of Education is continuing to find solutions for the myriad of problems created by these drastic demographic changes.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

TESTIMONY

OF

ROBERT A. DERZON

ADMINISTRATOR, HEALTH CARE FINANCING ADMINISTRATION

BEFORE THE

SELECT COMMITTEE ON POPULATION

OF THE

HOUSE OF REPRESENTATIVES

THURSDAY, JUNE 1, 1978

Mr. Chairman, Members of the Committee,

I am Robert A. Derzon, Administrator, Health Care Financing Administration. I am pleased to be here today with David R. McKusick, Supervisory Actuary, Demographics and Special Coverage Analysis Staff, HCFA, to discuss the views of the Health Care Financing Administration as to how demographic changes may impact on the financing of the Medicare and Medicaid programs. I would like to commend you and your Committee for your initiative in examining this important issue. We share your concern that the Federal Government must rethink present and develop future health care policies which take into account expected demographic changes.

You will recall that the Medicare and Medicaid programs had their genesis in 1965 as a result of the need of the aged and the poor for adequate protection against the high costs of health care. Just as they are today, hospital expenses were, on the average, about 3 times as high as expenses incurred by the under-age-65 population. They were particularly burdensome to the majority of the aged living on reduced retirement incomes. Adequate private health insurance was generally not available to these groups at affordable rates. For the aged, employer-sponsored group health plans usually terminate upon their retirement. Thus, health insurance protection for the aged and poor via the Medicare and Medicaid programs is an important responsibility of the Federal Government. A fundamental goal of these programs is that the beneficiary groups should have adequate and affordable basic health insurance protection. Demographic changes will place an increasing burden on the financial resources needed to meet this commitment.

What are the major demographic changes which will impact most heavily on future financing of the Medicare program? First, life expectancy has increased substantially. For example, in 1940, the average life expectancy was 63.5 years -- lower than the Medicare program's eligibility age of 65. Today, three-quarters of the population reach age 65 and, once there, men are expected to live another 14 years, women another 18. The trend in extension of average life expectancy is, however, expected to be slower in the future. Improvements in longevity during the 1950's and 1960's were substantially below the improvements of the 1930's and 1940's. Many demographers expect improvement to continue at these lower rates into the future, although there have been promising improvements in mortality from heart disease in very recent years. If improvement continues to be modest, by the year 2050 a slightly larger proportion of the population will live to age 65 -- once there, men will live another 15.5 years, women another 20.5.

Second, there has been a dramatic decline in fertility rates since 1955 from nearly 3.6 children per woman to about 1.7 in 1976.

Third, we expect that the postwar "baby boom" of 1945 to 1955 will reappear early in the 21st century as a "senior boom." The net results of the "senior boom" and "baby bust" is a drop in the percentage of the population expected to be contributors to the program relative to the expected percentage of Medicare beneficiaries. In 1900, only 4% (about 3 million) of the population was age 65 or over; in 1966, 9.3% (about 18.5 million) were age 65 or over. Today, the proportion of aged is almost 11% (about 24 million people). By the year 2030, it is expected that 18% -- or 55 million people -- will be age 65 or over.

As the population is living longer, the composition of the senior population is changing. In 1940, only 30% of older citizens were age 75 or older; by the year 2000, they will comprise 45% of the elderly. This increase in percentage of persons age 75 and over substantially increases the cost of the Medicare program. For example, average per capita program costs per male beneficiary in calendar year 1977 for those age 65 to 69 was $712; for those age 75 to 79, $989; and for those age 85 and over, $1,232. As the distribution of beneficiaries shifts toward the higher ages in the future, program costs will grow by virtue of this shift.

Demographic changes in the aged population also are an important factor in the financing of the Medicaid program. As you know, Medicaid (title XIX) was enacted at the same time as Medicare. It was established to provide medical assistance to individuals and families who had low incomes and few resources. This program is financed jointly with state and federal funds. The current federal contribution to the cost of most services under the program ranges from 50% to 78%.

Medicaid payments for the aged have been increasing although the number of aged who receive care is declining. In 1971, aged Medicaid recipients made up 22.7 percent of the program's enrollment. At that time over 4 million people over 65 were covered by Medicaid. By fiscal year 1977 fewer than 3.7 million aged were Medicaid recipients, and we project that by FY 84, there will be about 3.175 million people on Medicaid who are over 65 years old. In that year, the aged will constitute 14.1 percent of the Medicaid population.

The Medicaid program is the major source of government financing for long term care. Skilled nursing facility services for individuals over 21 must be covered by every state Medicaid program. The costs of skilled nursing care for the aged under Medicaid is rising rapidly for a practically static Medicaid patient population. In fiscal year 1970, expenditures for skilled nursing facility services for the aged amounted to $1.3 billion. By fiscal year 1976, this amount had doubled. We expect that Medicaid will spend more than $4.5 billion for SNF services in FY 1984 or more than three times the amount it spent just fourteen years earlier.

Every state with a Medicaid program pays for intermediate care facility services. As with SNF services, the cost of ICF services for the aged has risen rapidly over the past few years. For example, In FY 1973, Medicaid paid 1.1 billion dollars for ICF services. Four years later, in FY 1977, Medicaid paid more than $3.5 billion for ICF care for the aged. By FY 1984, we project that the government will be spending over $5 billion for intermediate care facility services under Medicaid.

The utilization rates for nursing home services are greatly affected by advanced age. About one million people over age 65 account for 89 percent of all nursing home patients. For every 1000 people aged 75-89, there are 59 nursing home residents. This compares with 12 residents per 1000 for people aged 65-74. Almost one quarter of the aged 85 years or older are in nursing homes.

Thus, it is clear that many, many aged people do require nursing home care under Medicaid. However, as I will point out later in my testimony, we must search for realistic alternatives to institutional long-term-care services. Such alternatives will not only be of benefit to the taxpayers who are paying for Medicaid, but will help many aged who do not need to be confined to institutions.

In 1977, 41 of the 53 states and jursidictions with Medicaid programs covered care provided to patients over 65 who were in mental hospitals. An estimated 186 million federal and state dollars were spent under the Medicaid program in 1977 for these services. The major mental disorder of old age is senile dementia. With the increase in the elderly population senile dementia is an increasingly common condition. However, this has not given rise to increased use of mental hospital services by the elderly. The nursing home has steadily replaced the mental hospital as the primary locus of institutional care for the elderly mentally ill. In 1969, 56 per cent of persons 65 years and over with a mental disorder who were resident in either a mental hospital or nursing home were in mental hospitals, while 44 per cent were in nursing homes. By 1973, only 29 per cent were in mental hospitals and 71 per cent were in nursing homes. Admission rates to state and county mental hospitals were declined sharply for those 65 and over. In 1962, approximately 164 of every 100,000 people 65 and over were admitted to a state or county mental hospital for the first time. In 1975, the comparable figure was approximately 37 of every 100,000. This represents a decrease of 78 per cent in first admissions to these mental institutions.

As you know, the Medicare program was not designed to cover all of the health costs of the aged. In fiscal year 1966, the year just prior to Medicare, per capita health costs of the age-65-and-over were only $445. Only 11 years later, for fiscal year 1977, per capita spending for health care of the aged has almost quadrupled -- to $1,738. As total per capita spending for the aged has increased, Federal benefit payments for the hospital insurance program (part A of Medicare) have also increased. In fiscal year 1967, part A benefit payments for 18 million aged beneficiaries was $3 billion. For fiscal year 1979, it is estimated that part A costs will be about $18 billion for almost 24 million aged beneficiaries. Increased enrollment of aged beneficiaries in the program accounted for $1 billion of this $15 billion increase. Most of the remainder was due to increased cost per person served. By 1985, the number of aged beneficiaries is expected to be about 27 million -- costs for this group are expected to more than double -- to about $41 billion. Again, the primary cause of this increase is due to increased cost per user of services.

Let me now discuss the way the Medicare program is financed and the implications demographic changes and inflation may have upon this financing. As you know, the Medicare program has two parts. The hospital insurance program (part A) covers the cost of inpatient and related care incurred by Medicare beneficiaries, and is financed through the earnings-related contributions paid by employers, employees, and self-employed persons in work covered under the social security and railroad retirement programs. The part A program may be considered self-supporting in the sense that payroll taxes and interest earned on the hospital insurance trust fund are the primary sources of income providing for the benefit costs and administrative expenses of beneficiaries under the program. The part A program is financed on a current-cost basis; that is, annual income is intended to be approximately equal to annual outgo, plus a small additional amount to maintain the trust fund at a sufficient level to serve as a contingency reserve.

Tax rates currently specified in the law (including the scheduled increases in 1979 and 1981) are sufficient, along with interest earnings, to support program expenditures over the next few years. However, starting about the middle of the 1980's, outgo is expected to exceed income by a large margin, leading to exhaustion of the fund by the late 1980's or 1990. Outgo is expected to continue to exceed income for the rest of the projected period (projections for the hospital insurance trust fund are made for the next 25 years) producing an average deficit of 1.12% of taxable payroll over the entire 25-year projection period.

Future income from social security taxes, and future expenditures for benefit costs and administrative expenses of the part A program, depend upon many factors -- the type and level of health care financed by the program; inflation of health care costs; the size, composition, and health needs of the population receiving the benefits; and the size and characteristics, including the earnings levels, of the population generating the taxes used to provide such benefits. Future fertility and mortality rates, labor force participation and unemployment rates, advances in medical technology, retirement-age patterns, and many more interrelated demographic and nondemographic variables affect the actuarial balance of the part A trust fund.

The supplementary medical insurance program (part B of Medicare), which complements part A by helping to pay for physician services and other medical care costs, is a voluntary program financed through the monthly premiums (presently $7.70 a month - $8.20 a month effective July 1978) paid by those who elect to enroll for this protection, and through Federal general revenues. About 94% of the aged population is enrolled in the part B program.

Originally, the monthly general revenue payment was designed to be equal to the monthly part B premium payment by the enrollee. Consequently, the cost of providing part B benefits was financed equally by enrollees' premiums and general revenues. As a result of the 1972 social security amendments, the annual increase in the part B premium can be no greater than the general cost-of-living increase or statutory increase in social

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security cash benefits which precedes the announcement of the new premiums. Any loss of income resulting from this restriction on premiums is made up by general revenues. Since this provision has been in effect, medical costs per person have risen much faster than cash benefit increases and therefore faster than the monthly premium. In addition, the 1972 amendments enable disabled persons under age 65 to participate in part B by paying the same monthly premium as persons age 65 and over, even though the per capita cost of financing health care for disabled persons is higher than that of aged persons. Again, costs not met by premiums are paid by general revenues.

As a result of these two factors, premiums currently account for only about 30% of the income to the part B program and general revenues account for 70%. As health care costs continue to rise faster than the cost of living, we can expect the percentage of general revenue financing required to continue to increase and the beneficiary's share to decline. By 1984, general revenue financing is expected to represent about 79% of the income to the part B program.

Within the framework of the aforementioned demographic changes and financing of the Medicare program, what are the policy issues most requiring our attention? First, we must recognize that as the aged grow as a percentage of total population over the next 50 years, and as the percentage of the population under age 65 declines correspondingly, a relatively decreasing wage-earning population will bear an ever-increasing financial responsibility to meet the health care needs of Medicare beneficiaries. This is true for both part A, where financing is generated directly from a payroll tax, and part B, where the majority of financing is generated from income taxes and other sources of general revenue funds. For the Federal Government to maintain its commitment to provide for the health care needs of the aged over this period, every effort will have to be made to assure that the costs of the Medicare program are kept within reasonable bounds. Clearly, our ability to deal effectively with inflation in the health care industry will be critical to our efforts to keep the program affordable to those who will be asked to bear these costs.

Hospital costs continue to be the largest segment of HCFA expenditures and have the highest inflation rate. They contribute the major share of the projected increase in HCFA expenditures of $5 billion for fiscal year 1979. That is over 95% of the total increase in health expenditures by the Department of Health, Education, and Welfare. The so-called "uncontrollables" are eliminating the discretion in Government. Coupled with demographic changes, inflation of health costs is our most troublesome and vexing problem. For this reason, the President submitted the hospital cost containment proposal to the Congress more than a year ago.

Second, we must reevaluate the basic philosophy of the Medicare program. Unless the philosophy is changed, we cannot spend great sums of money on long-term care, preventive, or educational services. The thrust of the Medicare program has been toward taking care of acutely ill people. Financing of long-term care, education, and social services has come out of other parts of Government. We must examine, coordinate, and prepare for changes in our own and other Federal programs designed to meet the health care and social needs of a changing aged population. By the year 2000, there will be over 3 million persons over the age of 85. Institutionalization rates in this age group are the highest -- almost 10 times that of the population between the ages of 65 and 75. As the focal point within the Federal Government for the development of policies in response to the health care needs of the aged, HCFA will face a number of critical issues with respect to long-term care. We are dedicated to formulating policies which will assure placement of persons in quality settings of the appropriate type that are also least confining and least creative of dependency. Our goal is to deemphasize institutional and inpatient settings and emphasize ambulatory outpatient and home health care services. We are continuing our research to test alternative ways to deliver health care. Health maintenance organizations for the elderly, day care centers, congregate housing providing certain health and social services, ambulatory surgicenters and hospices, to name just a few, may be more economical, appropriate, and safe alternatives to hospitals and nursing homes.

Finally, we must examine our reimbursement mechanisms in terms of their relationship to health planning, in order to assure the development of an integrated approach to meeting the health care needs of a growing aged population. This will be especially important as we approach the next century because of the uneven growth pattern which we expect. On the one hand, we know that the number of individuals age 65 and over will grow dramatically in the early part of the century as the baby boom of the 1940's reaches retirement age. This will place new and greater demands on the health care delivery system. At the same time, we will have to be sensitive to the fact that this growth rate is transitory, and that thereafter the growth rate will be at a substantially slower pace. In light of this pattern, we will have to be careful not to let the bulge in the aged population result in overinvesting in costly capital and health manpower which may outlive their usefulness when the aged population stabilizes.

Mr. Chairman, thank you for this opportunity to testify. We would be happy to respond to any questions you or members of your Committee may have.

TESTIMONY OF ELMER W. SMITH
ASSOCIATE COMMISSIONER FOR PROGRAM POLICY AND PLANNING,
SOCIAL SECURITY ADMINISTRATION,
BEFORE THE SELECT COMMITTEE ON POPULATION,
HOUSE OF REPRESENTATIVES

JUNE 1, 1978

INTRODUCTION

MR. CHAIRMAN, MEMBERS OF THE COMMITTEE, I AM ELMER W. SMITH, ASSOCIATE COMMISSIONER FOR PROGRAM POLICY AND PLANNING, SOCIAL SECURITY ADMINISTRATION, AND I AM GLAD TO BE HERE TODAY TO DISCUSS THE EFFECT OF RECENT AND PROJECTED DEMOGRAPHIC CHANGES ON THE SOCIAL SECURITY SYSTEM. WITH ME IS MR. FRANCISCO BAYO, DEPUTY CHIEF ACTUARY, SOCIAL SECURITY ADMINISTRATION. AS YOU MAY KNOW, MR. BAYO HAS RESPONSIBILITY FOR LONG-RANGE PROJECTIONS OF THE COST OF THE SOCIAL SECURITY PROGRAM. THE MOST RECENT ACTUARIAL PROJECTIONS ARE CONTAINED IN THE 1978 TRUSTEES' REPORTS, TRANSMITTED TO THE CONGRESS ON MAY 15; I WILL BE

REFERRING TO THE REPORTS IN THE COURSE OF MY TESTIMONY. I WILL BE LIMITING MY DISCUSSION TO THE SOCIAL SECURITY CASH BENEFITS PROGRAMS OF OLD-AGE AND SURVIVORS INSURANCE AND DISABILITY INSURANCE; MR. DERZON HAS ALREADY TESTIFIED WITH RESPECT TO THE MEDICARE PROGRAM. WITH REGARD TO SOCIAL SECURITY CASH BENEFITS, THE DEMOGRAPHIC SITUATION HAS SIGNIFICANT EFFECTS ON BOTH THE OLD-AGE AND SURVIVORS INSURANCE PROGRAM AND THE DISABILITY INSURANCE PROGRAM, BUT THE EFFECTS ARE PARTICULARLY SIGNIFICANT WITH REGARD TO THE FORMER SO THAT WILL BE THE MAJOR FOCUS OF MY TESTIMONY.

I WELCOME THE OPPORTUNITY TO EXAMINE WITH YOU SOME OF THE EFFECTS OF DEMOGRAPHIC CHANGES BECAUSE THEY ARE SO IMPORTANT FOR THE SOCIAL SECURITY PROGRAM. DEMOGRAPHIC FACTORS HAVE TWO MAJOR EFFECTS ON THE SOCIAL SECURITY PROGRAM: FIRST, THEY AFFECT THE FINANCIAL STATUS OF THE SOCIAL SECURITY PROGRAM AND NEED TO BE TAKEN INTO ACCOUNT.

ANOTHER IMPORTANT CONSIDERATION IS THAT THEY MUST ALSO BE TAKEN INTO ACCOUNT IN EVALUATING THE RESPONSIVENESS OF THE PROGRAM TO THE CHANGING NEEDS OF OUR PEOPLE.

IT IS OBVIOUSLY IMPORTANT THAT THE SOCIAL SECURITY PROGRAM BE FINANCIALLY SOUND AND THAT THE PUBLIC FEEL CONFIDENT ABOUT THE FINANCIAL SOUNDNESS OF THE PROGRAM. TO ASSURE THIS WE MUST ASSESS THOSE FACTORS THAT AFFECT PROGRAM INCOME AND EXPENDITURES, AND TAKE THEM INTO ACCOUNT IN MAKING PROJECTIONS OF THE OPERATIONS OF THE PROGRAM.

THROUGHOUT THE HISTORY OF THE SOCIAL SECURITY PROGRAM, DEMOGRAPHIC ELEMENTS HAVE BEEN AN IMPORTANT FACTOR IN PROJECTIONS OF PROGRAM OPERATIONS. AS AN EXAMPLE, THE SOCIAL SECURITY ADMINISTRATION HAS LONG TAKEN THE BABY BOOM INTO ACCOUNT BOTH IN PROJECTING INCREASED INCOME TO THE PROGRAM AS THOSE INDIVIDUALS MOVE INTO THE LABOR FORCE AND IN PROJECTING INCREASED EXPENDITURES AS THE SAME INDIVIDUALS REACH RETIREMENT AGE AFTER THE TURN OF

THE CENTURY. IN THE SAME WAY THE FINANCING IMPACT OF THE DECREASE IN THE FERTILITY RATE, WHICH SO CLOSELY FOLLOWED THE BABY BOOM, MUST ALSO BE TAKEN INTO ACCOUNT. BUT IT IS ALSO IMPORTANT TO ASSESS DEMOGRAPHIC CHANGES IN TERMS OF THE EFFECT THEY HAVE ON THE NEEDS OF SOCIETY FOR THE PROTECTION AFFORDED BY THE SOCIAL SECURITY PROGRAM, AND HOW THOSE NEEDS MAY CHANGE OVER TIME. FOR EXAMPLE, HOW WE AS A NATION RESPOND TO THE CHANGES BROUGHT ON BY WHAT HAS BEEN CALLED "THE GRAYING OF AMERICA" WILL DETERMINE TO A SIGNIFICANT EXTENT THE KINDS OF ADJUSTMENTS THAT WILL BE NECESSARY IN THE SOCIAL SECURITY PROGRAM. THE SOCIAL SECURITY CHANGES THAT MAY BE NEEDED MUST BE CONSIDERED IN THE BROADER PERSPECTIVE OF THE TOTAL SOCIETAL RESPONSE TO DEMOGRAPHIC CHANGE IF SOUND POLICY DECISIONS ARE TO BE MADE.

SUMMARY OF FACTORS AFFECTING FINANCIAL STATUS OF SOCIAL SECURITY

YOU HAVE ASKED ME TO TALK SPECIFICALLY ABOUT THE IMPACT OF THE BABY BOOM AND BUST--THE MAJOR DEMOGRAPHIC FEATURE OF THE

PAST QUARTER CENTURY--ON THE SOCIAL SECURITY SYSTEM, AND I WILL BE DOING SO. FIRST, THOUGH, I WANT TO POINT OUT SOMETHING THAT I THINK NEEDS TO BE REMEMBERED THROUGHOUT THE DISCUSSION.

THE FINANCIAL STATUS OF SOCIAL SECURITY IS DEPENDENT UPON MANY INTERRELATED FACTORS--SOME AFFECT INCOME, SOME EXPENDITURES, AND A NUMBER AFFECT BOTH. SOCIAL SECURITY INCOME IS AFFECTED BY THE SIZE AND COMPOSITION OF THE WORKING POPULATION AND THE LEVEL OF EARNINGS, WHICH IN TURN ARE DEPENDENT ON SUCH THINGS AS FERTILITY RATES, MORTALITY RATES, MIGRATION RATES, LABOR FORCE PARTICIPATION RATES, UNEMPLOYMENT RATES, AND SO FORTH.

SOCIAL SECURITY EXPENDITURES ARE AFFECTED BY THE SIZE AND COMPOSITION OF THE BENEFICIARY POPULATION AND THE LEVEL OF BENEFITS, WHICH IN TURN ARE DEPENDENT ON SUCH THINGS AS RETIREMENT AND DISABILITY RATES, MORTALITY RATES, FERTILITY RATES, MARRIAGE RATES, CHANGES IN THE CONSUMER PRICE INDEX, AND SO FORTH.

SOME OF THE MATERIAL FACTORS ARE DEMOGRAPHIC AND SOME ARE ECONOMIC, AND MANY OF THE ECONOMIC FACTORS ARE DEPENDENT IN SOME WAY ON THE DEMOGRAPHIC ONES (OR VICE-VERSA). FOR EXAMPLE, UNEMPLOYMENT RATES AND WAGE PATTERNS ARE ECONOMIC INDICES WHICH ARE AFFECTED BY DEMOGRAPHIC FACTORS SUCH AS THE NUMBER OF PEOPLE NEWLY ENTERING THE LABOR FORCE. THE COMPOSITION OF THE WORK FORCE IS ALSO AFFECTED BY THE INCREASING LABOR FORCE PARTICIPATION OF WOMEN, WHICH IS RELATED TO THE BABY BUST AND CHANGING PERCEPTIONS OF SOCIAL ROLES.

ALSO, OF COURSE, THERE ARE DEMOGRAPHIC FACTORS OTHER THAN THE BABY BOOM AND BUST THAT IMPACT ON THE PROGRAM. THE FACT THAT LIFE EXPECTANCY HAS CONTINUED TO INCREASE

MEANS THAT THE RELATIVE NUMBER OF AGED PEOPLE IN THE POPULATION WILL INCREASE BEYOND WHAT WE WOULD OTHERWISE EXPECT MERELY AS A RESULT OF THE AGING OF THE BABY BOOM COHORT. THE

FACT THAT IMPROVEMENT IN MORTALITY RATES FOR WOMEN CONTINUES TO OUTPACE THE IMPROVEMENT IN THE RATES FOR MEN MEANS THAT WE MUST TAKE INTO ACCOUNT THAT THERE WILL BE PROPORTIONATELY MORE AGED NONMARRIED WOMEN AND FEWER AGED COUPLES.

THE OUTLOOK FOR SOCIAL SECURITY IS DEPENDENT ON ALL OF THESE DEMOGRAPHIC AND ECONOMIC FACTORS AND ALL OF THEM MUST BE CONSIDERED. WE CANNOT LOOK AT THE BABY BOOM AND BUST IN ISOLATION AS IF FERTILITY WERE THE ONLY FACTOR INVOLVED. FOR EXAMPLE, ONE RECENT ECONOMIC DEMOGRAPHIC PHENOMENON THAT HAS CONSIDERABLE IMPACT FOR THE SOCIAL SECURITY PROGRAM, AS WELL AS FOR SOCIETY IN GENERAL, IS THE INCREASE IN LABOR-FORCE PARTICIPATION OF WOMEN, ESPECIALLY MARRIED WOMEN.

THIS HAS IMPORTANT CONSEQUENCES FOR THE SOCIAL SECURITY PROGRAM AS MORE AND MORE WOMEN WILL PAY SOCIAL SECURITY TAXES AND WILL QUALIFY FOR BENEFITS IN THEIR OWN RIGHT AS WORKERS RATHER THAN DEPENDING ON DERIVATIVE PROTECTION BASED ON THEIR HUSBANDS'

EARNINGS. HOWEVER, THIS CHANGE CAN HAVE A MUCH MORE FAR-REACHING IMPACT ON THE PROGRAM BY RAISING BASIC QUESTIONS ABOUT THE VALIDITY OF THE DEPENDENCY BASIS OF SOCIAL SECURITY BENEFITS FOR SPOUSES AND SURVIVING SPOUSES.

BUT LET ME NOW RELATE SOME OF THE EFFECTS OF THE BABY BOOM AND BUST ON OUR NATION AND MORE SPECIFICALLY ON THE SOCIAL SECURITY PROGRAM. THEN I WILL DISCUSS IN SOME DETAIL THE DEMOGRAPHIC AND ECONOMIC ASSUMPTIONS THAT ARE USED TO PROJECT SOCIAL SECURITY PROGRAM INCOME AND EXPENDITURES OVER THE LONG RANGE AND HOW CHANGES IN DEMOGRAPHIC TRENDS CAN HAVE IMPORTANT RAMIFICATIONS FOR THE SOCIAL SECURITY PROGRAM.

EFFECTS OF THE "BABY BOOM AND BUST" ON THE RATIO OF WORKERS TO BENEFICIARIES

THE EFFECT OF THE BABY BOOM ON SOCIAL SECURITY HAS BEEN RECOGNIZED AND TAKEN INTO ACCOUNT FOR SOME TIME: A LARGE COHORT OF BABIES IS BECOMING A LARGE COHORT OF YOUNG WORKERS THAT WILL

BECOME A LARGE COHORT OF RETIREES AFTER THE TURN OF THE CENTURY. TODAY THERE ARE ABOUT 31 PEOPLE GETTING SOCIAL SECURITY BENEFITS FOR EVERY 100 WORKERS; SOMETIME AFTER THE TURN OF THE CENTURY, THERE WILL BE ABOUT 50 BENEFICIARIES PER HUNDRED WORKERS.

WHAT MAY NOT HAVE BEEN AS CLEARLY RECOGNIZED IS THAT THIS OUTSIZED COHORT HAS AFFECTED AND WILL AFFECT NOT ONLY THE SIZE OF THE POPULATION AND ITS AGE COMPOSITION BUT ALSO OUR COLLECTIVE PERCEPTIONS OF VALUES AND GOALS. THE DEMOGRAPHIC DISCONTINUITY OF THE BABY BOOM HAS ALREADY HAD RAMIFICATIONS FOR THE NATION--FOR EXAMPLE, IN THE EDUCATIONAL SYSTEM, IN CONSUMPTION PATTERNS, AND IN MANY OTHER WAYS. WE CAN EXPECT ADDITIONAL SOCIETAL EFFECTS AS THIS GROUP MATURES AND EVENTUALLY RETIRES. FURTHER, THESE EFFECTS WILL BE MAGNIFIED BY THE EFFECTS OF THE LOW FERTILITY RATES PREVAILING BOTH BEFORE AND SINCE THE BABY BOOM.

Over the period 1957 through 1976, fertility rates declined from the baby boom high of nearly 3.6 children per woman to about 1.7 in 1976. Since 1972, the fertility rate has been below the so-called "population replacement rate" of 2.1 and is expected to remain below that level for some time to come. Although the fertility rate for 1977--about 1.8 --is slightly higher than that for 1976, it would be premature to assume that the declining trend of the past two decades has been significantly reversed. Rather, the current assumption--reflected in the intermediate cost estimates in the 1978 Trustees' Reports--is that the rate will gradually rise to 2.0 by 1990, and to an "ultimate" rate of 2.1 after the turn of the century.

After the turn of the century, the baby boom cohort will begin to reach retirement age and will gradually replace the cohort of aged beneficiaries that reflects the low fertility

RATES OF THE GREAT DEPRESSION AND EARLY WAR YEARS. AS THIS OCCURS, AND AS THE THEN-CURRENT WORK FORCE REFLECTS THE LOW FERTILITY RATES THAT PREVAIL TODAY, THE COST OF THE PROGRAM IS PROJECTED TO INCREASE SHARPLY, REACHING A PEAK IN THE PERIOD 2030-40. THEREAFTER, AS THE BABY BOOM COHORT BEGINS TO DIE AND IS REPLACED ON THE BENEFIT ROLLS BY THE BABY BUST GENERATION, AND AS THE PEOPLE BORN AFTER THE TURN OF THE CENTURY REACH WORKING AGE, PROJECTIONS SHOW THAT WORKER TO BENEFICIARY RATIOS AND COSTS AS A PERCENT OF TAXABLE PAYROLL WILL TEND TO STABILIZE.

IN BRIEF, THEN, THE BABY BOOM COHORT WILL INCREASE THE PROPORTION OF BENEFICIARIES TO WORKERS IN THE NEXT CENTURY AND THE BABY BUST WILL MAGNIFY THIS SITUATION BY REDUCING THE NUMBER OF POTENTIAL WORKERS. THE EFFECTS ON THE SOCIAL SECURITY PROGRAM ARE OBVIOUS--HIGHER SOCIAL SECURITY EXPENDITURES BECAUSE THERE

ARE MORE RETIRED WORKERS AND LESS INCOME BECAUSE THERE ARE FEWER ACTIVE WORKERS.

SOCIAL AND ECONOMIC EFFECT OF THE BABY BOOM AND BUST

BUT THERE IS MORE TO IT THAN THIS. THE BABY BOOM AND BUST HAS AN EFFECT ON THE SOCIAL AND ECONOMIC SITUATION IN THE COUNTRY AND THE INTERRELATIONSHIP OF THESE FACTORS AFFECTS PRODUCTIVITY RATES, LABOR FORCE PARTICIPATION, AND THE LIKE, WHICH IN TURN WILL AFFECT THE SOCIAL SECURITY PROGRAM. LET ME BRIEFLY MENTION THE MORE IMPORTANT OF THESE EFFECTS AND INTERRELATIONSHIPS.

THE AGE COMPOSITION OF OUR POPULATION MAY AFFECT THE GROWTH OF OUR ECONOMY. SOON THE BABY BOOM COHORT WILL BEGIN TO REACH THE PRIME PRODUCTIVE AGE RANGE

AND PRODUCTIVITY GROWTH MAY BE EXPECTED SOON TO REACH LEVELS SOMEWHAT ABOVE RECENT EXPERIENCE AND MAINTAIN THOSE HIGHER RATES UNTIL THE 1990'S. INDEED, WE PROJECT THAT PRODUCTIVITY WILL REMAIN ABOVE THE LEVELS OF THE RECENT PAST UNTIL ALMOST THE TURN OF THE CENTURY BEFORE DECLINING TO THE LONG RUN GROWTH RATE.

THE STRUCTURE OF THE LABOR FORCE WILL CHANGE, AND LABOR FORCE PARTICIPATION RATES AND RATES OF AUTOMATION AND CAPITAL INVESTMENT MAY BE ALTERED IN RESPONSE. CHANGES IN THE STRUCTURE OF THE LABOR FORCE WILL BE DUE NOT ONLY TO THE AGING OF THE POPULATION DUE TO THE BABY BOOM AND BUST BUT TO SEVERAL OTHER FACTORS AS WELL. THE MOST IMPORTANT OF THESE ARE:

--IMPROVEMENT IN MORTALITY RATES AT MIDDLE AND ADVANCED YEARS.

--REDUCTION IN THE POPULATION GROWTH RATE BECAUSE OF THE DECLINE IN THE BIRTH RATE.

--CONTINUING INCREASES IN THE LABOR FORCE PARTICIPATION OF WOMEN.

IT HAS BEEN PREDICTED IN A NUMBER OF QUARTERS THAT IMPROVEMENT IN MORTALITY RATES AT MIDDLE AND ADVANCED YEARS MAY INCREASE INTERGENERATIONAL CONFLICTS UNLESS THE ECONOMY BECOMES MORE FLEXIBLE AND EXPANSIONARY THAN IT NOW IS, AND THUS BECOMES MORE CONDUCIVE TO HIGH EMPLOYMENT AT ALL AGE LEVELS. IT IS ARGUED THAT, IF OLDER PEOPLE REMAIN IN THE LABOR FORCE LONGER, JOB OPPORTUNITIES FOR YOUNGER PEOPLE ARE REDUCED UNLESS OTHER ECONOMIC CHANGES OFFSET THIS. SUCH CONSIDERATIONS ARE RELEVANT OF COURSE TO THE IDEA OF RAISING THE AGE OF ELIGIBILITY FOR SOCIAL SECURITY RETIREMENT BENEFITS AS A MEANS OF COUNTERING THE ANTICIPATED HIGHER COSTS OF THE PROGRAM AFTER THE TURN OF THE CENTURY. ON THE OTHER HAND, THEY ALSO SUGGEST THE POSSIBILITY THAT AS A RESULT OF IMPROVING MORTALITY AT OLDER AGES, PEOPLE MAY TEND TO BE ON THE BENEFIT ROLLS LONGER. IN THIS EVENT, OTHER KINDS OF SOCIAL SECURITY PROGRAM CHANGES MIGHT BE RELEVANT;

FOR EXAMPLE, CONSIDERATION MIGHT BE GIVEN TO A SOMEWHAT GREATER THAN COST-OF-LIVING INCREASE IN BENEFITS FOR PEOPLE WHO HAD BEEN ON THE ROLLS FOR MANY YEARS, TO ALLOW THEM TO SHARE IN THE FRUITS OF INCREASING PRODUCTIVITY AFTER THEY RETIRED.

A FERTILITY RATE WHICH RESULTS IN STABILIZATION OF TOTAL POPULATION WILL CLEARLY ALSO AFFECT ECONOMIC GROWTH. WHAT IS NOT READILY APPARENT IS THE DEGREE OF TECHNOLOGICAL ADVANCEMENT, RESOURCE USE, AND ENVIRONMENTAL POLLUTION THAT A SLOW- OR NO-GROWTH SOCIETY WILL PERCEIVE TO BE OPTIMUM. THE CHOICES MADE HERE WILL ALSO AFFECT THE NUMBER OF PEOPLE WHO WORK, THE KINDS OF JOBS THEY PERFORM AND, IN TURN, SOCIAL SECURITY PROGRAM INCOME.

AND, OVERALL, THE RELATIONSHIPS BETWEEN THE WORKING-AGE POPULATION (AGE 20-64) AND NONWORKING-AGE GROUPS WILL BE CHANGING. WHILE THE RATIO OF THOSE AGE 65 AND OVER TO THE WORKING-AGE POPULATION WILL BE INCREASING, THE PROPORTION OF PEOPLE UNDER AGE 20 WILL DECLINE. THE RELATIVELY LOW FERTILITY RATES OF THE PAST FEW YEARS WILL ALSO AFFECT THE COSTS OF BENEFITS FOR YOUNG DEPENDENTS AND SURVIVORS UNDER THE SOCIAL SECURITY PROGRAM. THE RELATIVE COST OF SUPPORTING YOUNG DEPENDENTS IS ALREADY LESS THAN IN THE 1950'S AND 1960'S AND PROBABLY WILL CONTINUE TO DECLINE UNTIL AFTER THE TURN OF THE CENTURY.

ALSO THE OVERALL RATIO OF THOSE YOUNGER THAN 20 OR OLDER THAN 64 TO THE WORKING AGE POPULATION IS FALLING, SO THAT THE COST TO THOSE WHO ARE WORKING OF SUPPORTING THOSE WHO ARE NOT ECONOMICALLY PRODUCTIVE MAY DECLINE. THUS DECISIONS AS TO THE ACCEPTABLE LEVEL OF SUPPORT FOR THE AGED OR THE YOUNG

SHOULD TAKE INTO ACCOUNT THE INTERRELATIONSHIP OF THESE TWO GROUPS.

IT IS OF COURSE NOT POSSIBLE FOR US TO KNOW OR PREDICT EXACTLY WHAT THE FUTURE HOLDS WITH RESPECT TO DEMOGRAPHIC FACTORS OR THE SOCIAL AND ECONOMIC EFFECTS OF DEMOGRAPHIC CHANGES. WHAT WE CAN DO IS TRY TO MAKE REALISTIC AND REASONABLE ASSUMPTIONS ABOUT DEMOGRAPHIC FACTORS IN THE FUTURE BASED ON CURRENT UNDERSTANDING OF THE BEHAVIOR OF THESE FACTORS. THESE ASSUMPTIONS ARE EMPLOYED TO PROJECT THE TREND AND RANGE OF FUTURE PROGRAM INCOME AND EXPENDITURES. SUCH PROJECTIONS ARE NOT--AND CANNOT BE CONSIDERED TO BE--EXACT PREDICTIONS OF FUTURE EXPERIENCE. HOWEVER, WHEN REVISED PERIODICALLY TO REFLECT CHANGES IN EXPERIENCE AND INTERPRETATION, THEY CAN PROVIDE INFORMATION THAT IS ESSENTIAL FOR MAKING INFORMED POLICY DECISIONS.

ASSUMPTIONS USED IN ESTIMATING FUTURE PROGRAM COSTS

NOW LET ME TURN MORE SPECIFICALLY TO SSA'S CURRENT ESTIMATES OF FUTURE PROGRAM INCOME AND EXPENDITURES. IN CONSIDERING THE MEDIUM-RANGE (25-YEAR) OR LONG-RANGE (75-YEAR) ACTUARIAL STATUS OF THE SOCIAL SECURITY PROGRAM, INTEREST GENERALLY CENTERS AROUND WHETHER THE SYSTEM HAS AN "ACTUARIAL SURPLUS" OR AN "ACTUARIAL DEFICIT".

--AN "ACTUARIAL SURPLUS" EXISTS WHEN THE AVERAGE OF THE SCHEDULED TAX RATES EXCEEDS THE ESTIMATED AVERAGE EXPENDITURES, EXPRESSED AS A PERCENT OF PAYROLL.

--AN "ACTUARIAL DEFICIT" EXISTS WHEN THE ESTIMATED AVERAGE EXPENDITURES EXCEED THE AVERAGE OF THE SCHEDULED TAX RATES.

Because of obvious uncertainties inherent in projecting future economic and demographic developments, the estimates presented in the Trustees' Reports are based on three alternative sets of assumptions--designated as alternatives I, II, and III. Alternative II is referred to as the intermediate set of assumptions and it is this set of assumptions that I will discuss. (Alternatives I and III may be respectively characterized as more "optimistic" and more "pessimistic" than Alternative II.)

Now, I want to summarize the Alternative II assumptions; they include, among others, demographic assumptions of fertility and mortality rates and economic assumptions of the growth of the gross national product, average wage rates, and the consumer price index, as well as unemployment rates.

Demographic Assumptions: Under Alternative II assumptions, the total fertility rate is assumed to rise slowly from its

1978 LEVEL OF NEARLY 1.8 CHILDREN PER WOMAN TO AN ULTIMATE LEVEL OF 2.1 CHILDREN PER WOMAN AROUND THE YEAR 2005.

MORTALITY RATES IN THE UNITED STATES HAVE HAD A MUCH LESS ERRATIC HISTORY THAN HAVE FERTILITY RATES. SSA PROJECTS THAT THE GENERAL TREND OF IMPROVING MORTALITY BETWEEN 1950-75 WILL CONTINUE TO 2050, RESULTING IN A PROJECTED MORTALITY LEVEL THAT IS ABOUT 19 PERCENT BELOW THE 1977 LEVEL. THIS PROJECTED IMPROVEMENT IN MORTALITY RANGES FROM A LOW OF ABOUT 13 PERCENT FOR MEN AGED 20-64 TO A HIGH OF ABOUT 38 PERCENT FOR WOMEN UNDER 20.

ECONOMIC ASSUMPTIONS: THE ECONOMIC RECOVERY FROM THE RECESSION THAT BEGAN IN 1974 IS ASSUMED TO CONTINUE AT A MODERATE RATE UNDER THE INTERMEDIATE ASSUMPTIONS, AND AT THE SAME TIME, THE UNEMPLOYMENT RATE IS ASSUMED

TO REACH AN ULTIMATE RATE OF 5 PERCENT BY 1985. IT IS FURTHER ASSUMED THAT THE ANNUAL RATE OF INCREASE IN AVERAGE WAGES IN COVERED EMPLOYMENT WILL REACH AN ULTIMATE LEVEL OF 5 3/4 PERCENT IN THE YEAR 2000.

THE CPI WAS ASSUMED TO DECREASE FROM THE RECENT HIGH RATES TO AN ULTIMATE ANNUAL RATE OF 4 PERCENT, WHICH IS SLIGHTLY HIGHER THAN THE 3.4 PERCENT AVERAGE OVER THE LAST 30 YEARS. THIS AVERAGE WAS SELECTED BECAUSE THE TREND OVER THE LAST 65 YEARS INDICATES A TENDENCY FOR THE RATE OF INCREASE IN THE CPI TO INCREASE SLOWLY WITH TIME. THE CURRENT OUTLOOK DOES NOT SUPPORT A CESSATION OR REVERSAL OF THIS TENDENCY.

I MIGHT MENTION AT THIS JUNCTURE THAT THE RATE OF INCREASE IN WAGES AND PRICES HAS IN THE PAST HAD A VERY CONSIDERABLE INFLUENCE ON THE PROJECTED ACTUARIAL BALANCE OF THE PROGRAM.

THIS WAS BECAUSE THE AUTOMATIC INCREASE PROVISIONS IN THE LAW OPERATED TO INCREASE BENEFITS FOR FUTURE RETIREES BY THE FULL AMOUNT OF ANY PRICE INCREASES PLUS ABOUT HALF THE AMOUNT OF ANY WAGE INCREASES. SINCE THE PROJECTED RATE OF INCREASE IN PRICES EXCEEDED ONE-HALF THE RATE OF INCREASE IN WAGES, FUTURE INITIAL BENEFIT LEVELS WERE PROJECTED TO RISE MORE RAPIDLY THAN WAGES. HOWEVER, THE 1977 AMENDMENTS MADE IMPORTANT CHANGES IN THE SOCIAL SECURITY BENEFIT STRUCTURE WHICH MADE THE PROGRAM MUCH LESS SENSITIVE TO INCREASES IN PRICES AND WAGES BY ELIMINATING THE DOUBLE INDEXING OF BENEFITS FOR FUTURE RETIREES. UNDER THE NEW LAW, BENEFITS FOR FUTURE RETIREES WILL INCREASE WITH WAGES WHILE THEY ARE WORKING AND WITH PRICES AFTER THEY ARE ELIGIBLE FOR BENEFITS.

NOW I WOULD LIKE TO DESCRIBE BRIEFLY HOW THE TWO SPECIFIC DEMOGRAPHIC ASSUMPTIONS--MORTALITY RATES AND FERTILITY RATES--AFFECT LONG-RANGE COST PROJECTIONS.

EFFECT OF DEMOGRAPHIC ASSUMPTIONS ON COST PROJECTIONS

MORTALITY RATES: OVER THE MEDIUM-RANGE PERIOD--25 YEARS--ESTIMATED AVERAGE EXPENDITURES INCREASE WITH THE IMPROVEMENT IN MORTALITY RATES. OVER THE LONG-RANGE PERIOD, A SIMILAR BUT MORE PRONOUNCED TREND EXISTS. THIS IS LARGELY DUE TO THE RELATIONSHIP BETWEEN AGE AND MORTALITY. LET ME EXPLAIN.

FOR THE POPULATION OVER AGE 65, WHERE MORTALITY RATES ARE THE HIGHEST, ANY IMPROVEMENT IN THE MORTALITY RATES MEANS THAT RETIREMENT BENEFITS WILL BE PAYABLE FOR A LONGER PERIOD OF TIME. IMPROVEMENTS IN MORTALITY RATES FOR PEOPLE BETWEEN AGES 50 AND 65 WOULD RESULT IN RELATIVELY MORE SOCIAL SECURITY TAX INCOME BECAUSE MANY OF THE PEOPLE IN THIS AGE GROUP ARE WORKERS. BUT THIS GAIN IN INCOME WOULD BE MORE THAN OFFSET BY THE RESULTING BENEFITS PAYABLE TO THE ADDITIONAL NEW RETIREES AT AGE 65.

At the ages of 20 through 50, mortality rates are quite low so that even substantial improvement in the rates would not result in significant gains in the number of covered workers paying social security taxes. Similarly, since mortality at ages under 20 is already relatively low, further improvement at these ages has relatively little effect, in the long run, on expenditures versus income.

Consequently, the net effect of further mortality improvement now is to increase expenditures more than tax income, thereby resulting in higher costs as a percent of taxable payroll. The 1978 Trustees' Report shows that the new

MORTALITY ASSUMPTIONS RESULT IN INCREASED SOCIAL SECURITY BENEFIT COSTS AVERAGING 0.07 PERCENT OF TAXABLE PAYROLL OVER THE NEXT 25 YEARS AND ABOUT 0.12 PERCENT OVER THE ENTIRE 75-YEAR VALUATION PERIOD.

IF NO IMPROVEMENT IN MORTALITY OVER THE RATES EXPERIENCED IN 1977 WERE ASSUMED, THE LONG-RANGE COST OF THE PRESENT PROGRAM WOULD BE REDUCED FROM 13.55 PERCENT OF PAYROLL TO 12.77 PERCENT. ON THE OTHER HAND, IF THE IMPROVEMENT IN MORTALITY IS TWICE AS GREAT AS THE TRUSTEES HAVE PROJECTED, THE COST OF THE PROGRAM WOULD BE INCREASED TO 14.34 PERCENT.

FERTILITY RATES: THE IMPLICATIONS OF PROJECTED FERTILITY RATES FOR PROGRAM COST PROJECTIONS ARE QUITE DIFFERENT. FIRST, SINCE NEARLY EVERYONE WHO WILL PAY SOCIAL SECURITY TAXES AND/OR DRAW BENEFITS IN THE NEXT 25 YEARS HAS ALREADY BEEN BORN, PROJECTED FERTILITY RATES HAVE A RELATIVELY MINOR EFFECT ON SHORT OR MEDIUM RANGE COSTS. FERTILITY RATE PROJECTIONS ARE PRIMARILY IMPORTANT IN EVALUATING COSTS FOR THE LONGER RANGE PERIOD 2003-2052.

THE EFFECT ON THE LONG-RANGE COST PROJECTIONS IS SIGNIFICANT BECAUSE THE NUMBER OF COVERED WORKERS AND BENEFICIARIES DURING THE LAST 50 YEARS OF THE LONG-RANGE PROJECTION PERIOD IS HIGHLY DEPENDENT ON THE PROJECTED FERTILITY RATES. HOWEVER, IT IS IMPORTANT TO RECOGNIZE THAT THE DEGREE OF UNCERTAINTY OF THE ESTIMATES INCREASES WITH THE LENGTH OF THE PROJECTION PERIOD--THE DEGREE OF CONFIDENCE THAT CAN BE PLACED IN DEMOGRAPHIC ASSUMPTIONS IS GREATER FOR THE FIRST 25 YEARS

THAN FOR THE ENTIRE LONG-RANGE VALUATION PERIOD. FOR THIS REASON, IT HAS NOT SEEMED REASONABLE TO PROJECT EITHER CONTINUING INCREASES OR CONTINUING DECREASES IN FERTILITY RATES OVER A PERIOD AS LONG AS 75 YEARS. (ALSO, OF COURSE, THE RATE PROJECTED FOR THE FINAL 25-YEAR PERIOD HAS RELATIVELY LITTLE ACTUAL EFFECT IN TERMS OF PROGRAM INCOME OR EXPENDITURES DURING THAT PERIOD.)

IN GENERAL, THE HIGHER THE PROJECTED FERTILITY RATE THE LOWER THE LONG-RANGE COST WILL BE, OTHER THINGS BEING EQUAL. HOWEVER, GIVEN THE GREAT UNCERTAINTY IN PROJECTING FERTILITY RATES AND THEIR GREAT POTENTIAL IMPACT ON THE LONG-RANGE BALANCE OF THE PROGRAM, THE ALTERNATIVE SETS OF ASSUMPTIONS DEVELOPED IN THE 1978 TRUSTEES' REPORTS USE ALTERNATIVE ASSUMPTIONS AS TO THE ULTIMATE FUTURE FERTILITY RATE--RANGING FROM 1.7 IN THE MORE PESSIMISTIC SET OF ASSUMPTIONS TO 2.3 IN THE MORE OPTIMISTIC SET.

Only with a much higher fertility rate, say, 2.5--would the relatively larger number of children receiving benefits during the first 25 years be sufficient to have a perceptible cost effect--an increase of 0.01 percent of payroll. However, under higher fertility rate assumptions, the labor force increases earlier than the beneficiary population, and thus, long-range estimated average expenditures, expressed as a percent of taxable payroll, decrease with increasing fertility.

Outlook for Social Security

The recently enacted Social Security Amendments of 1977 made substantial improvements in the financial status of the social security program. As a result, the combined assets of the cash benefits program are expected to begin increasing in 1981, and the average annual income from taxes under present law is projected to exceed estimated average annual expenditures by about 1.0 percent of taxable payroll over the 25-year period 1978-2002.

The situation, though, is very different when you look at the final 25-year period. The long-range actuarial cost estimates indicate that estimated average annual expenditures will exceed estimated average annual income from taxes under present law by about 4.1 percent of taxable payroll over the 25-year period 2028-2052. Over 90 percent of this deficit arises in the old-age and survivors insurance part of the program (as opposed to the disability insurance part of the program). Nearly all of the OASI deficit is due to demographic factors--largely the projected shift in the relative numbers of beneficiaries and workers.

There is time to assess emerging economic and demographic experience and to revise and modify our projections if necessary. Nevertheless, the likelihood of significant

LONG-RANGE DEFICITS BASED ON CURRENT ESTIMATES AND ARISING PRIMARILY FROM PROJECTED DEMOGRAPHIC CHANGES MUST BE RECOGNIZED IN CURRENT PLANNING AND TAKEN INTO ACCOUNT IN PROPOSALS TO MODIFY THE SYSTEM. THIS SITUATION TENDS TO UNDERSCORE THE IMPORTANCE OF DEMOGRAPHIC PROJECTIONS IN THE LONG-RANGE PLANNING AND EVALUATION OF OUR SOCIAL INSTITUTIONS.

IMPACT OF RETIREMENT AGE ON THE SOCIAL SECURITY SYSTEM

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Testimony prepared for
The House Select Committee on Population
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INTRODUCTION

Retirement has become a distinct period in the life of most Americans only over the last half century. Yet today, the retirement behavior of older workers is one of the most important individual lifecycle decisions with significant implications for the economy. Labor force participation decisions are governed by the availability of social security benefits, private pension benefits, wages, health, family responsibilities, and other socioeconomic variables. Retirement has an obvious and important influence on expenditures for government support programs and the tax revenues that are collected. In the following testimony, I illustrate the necessity of a careful examination of future retirement policy and argue for a gradually rising age of eligibility for retirement programs. The key points of my testimony are:

*Population aging caused by low fertility tends to increase the proportion of the population in the older age groups.

*Holding the replacement rate constant and maintaining 65 as the age of eligibility for retirement benefits in the presence of replacement level fertility necessitates an increase in the proportion of payroll to finance benefits of over 60 percent during the next fifty years.

*Lower rates of fertility exacerbate the rise in tax rate.

*A gradual increasing of the retirement age offers the most satisfactory method of reducing the projected rise in future taxes.

What Is Retirement?

Despite considerable public debate concerning its causes and effects, the term retirement does not have a clear and unambiguous connotation. Many people consider retirement to be the termination of a long career, but it is also employed to note a significant reduction in hours of work below some minimum. Retirement frequently is used to denote the acceptance of pension benefits with the age of eligibility for the benefits called the retirement age. The "retirement" or earnings test that determines social security benefits is concerned with the amount of earnings. In empirical studies of the retirement process, other variables such as the individual's perception of retirement status, labor force participation, annual work rates, and expectations of retiring are adopted as indications or proxies for retirement.

Clearly, it is possible for a person to be counted as retired by some of these measures, but not by others. For example, military personnel can retire from the service (termination of a career) and begin receiving pension benefits, yet still work 40 hours a week for another employer. The diversity of indicators of retirement increases the difficulty of explaining the labor market activities of older persons. Any new research or review of existing studies must recognize explicitly these conceptual variations of retirement. This is of particular importance when economic variables or policy changes would be expected to have contradictory effects on the alternative indicators.

Factors Influencing Retirement

The labor supply decisions of the elderly are governed by pension-related variables, health status, aggregate economic characteristics, job related factors and a variety of other financial, individual and family characteristics. In a recent review of economic studies, Joseph Spengler and I concluded that retirement systems and health status are judged to be the primary determinants of reduced labor force activity.[1] An increasing number of studies are finding that there are also interactive effects between the health of an individual and the availability of pension benefits.

Social security and other pension benefits provide non-wage income to the elderly and therefore would be expected to reduce work effort. The receipt of these benefits is, however, in many instances, contingent on the total or partial withdrawal from the labor force by the beneficiary; i.e., earnings test, job change or compulsory retirement. Thus, pension systems provide the availability of income if labor force activity is reallocated or reduced. Within this framework, each individual tries to maximize his retirement income and life satisfaction.

The retirement incentive of the present system is illustrated in the following example. A married worker who had reached 65 in 1974 after a lifetime of earning the median wage would have been eligible for a social security benefit of $4,704. If he continued work, his gross earnings would have been $7,723, which would be reduced by a marginal federal income tax rate of 17 percent and a social security payroll tax of 5.85 percent. When combined with the reduction in benefits due to the earnings test, the implied marginal tax rate was 72.85 percent.[2]

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[1] Robert L. Clark and Joseph J. Spengler, The Economics of Individual and Population Aging, Cambridge: Cambridge University Press (forthcoming), Chapters VI and VII.

Since 1950, the growth and expansion of the social security system has played an important role in the decline in the labor force participation of older workers (see Table I). Half of the eligible insured persons aged 62-64 are now taking advantage of the early retirement option. This is, in part, responsible for the recent decline in the labor force participation rate of men aged 55-64. Coverage by private pensions has also contributed to rising incidence of retirement.

Financing Social Security Benefits

Retirement benefits to aged beneficiaries are financed by taxes on the earnings of current workers. If revenues are equal to benefits in each year, then the following equation depicts the intergenerational transfer inherent in the social security program.

$$1) \quad \sum_{i=16}^{n} (T_t Y_{it})(e_{it} L_{it}) = \sum_{j=62}^{n} B_{jt} R_{jt} \; .$$

where

T = tax rate payable on earnings in year t,

Y = average income of persons of age i in year t, all of which is assumed to be taxable,

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[2] George Tolley and Richard Burkhauser, "Integrating Social Security into an Incomes Policy," in Tolley and Burkhauser (Eds.), Income Support Policies for the Aged, Cambridge, Mass: Ballinger Publishing Company, 1977.

Table I. Civilian labor force participation rates for older workers by sex, 1948-76

Year	Male		Female	
	55-64	65 and over	55-64	65 and over
		(percent)		
1948	89.5	46.8	24.3	9.1
1949	87.5	47.0	25.3	9.6
1950	86.9	45.8	27.0	9.7
1951	87.2	44.9	27.6	8.9
1952	87.5	42.6	28.7	9.1
1953	87.9	41.6	29.1	10.0
1954	88.7	40.5	30.1	9.3
1955	87.9	39.6	32.5	10.6
1956	88.5	40.0	34.9	10.8
1957	87.5	37.5	34.5	10.5
1958	87.8	35.6	35.2	10.3
1959	87.4	34.2	36.6	10.2
1960	86.8	33.1	37.2	10.8
1961	87.3	31.7	37.9	10.7
1962	86.2	30.3	38.7	9.9
1963	86.2	28.4	39.7	9.6
1964	85.6	28.0	40.2	10.1
1965	84.6	27.9	41.1	10.0
1966	84.5	27.5	41.8	9.6
1967	84.4	27.1	42.8	9.6
1968	84.3	27.3	42.4	9.6
1969	83.4	27.2	43.1	9.9
1970	83.0	26.8	43.0	9.7
1971	82.2	25.5	42.9	9.5
1972	80.5	24.4	42.1	9.3
1973	78.3	22.8	41.1	8.9
1974	77.4	22.4	40.7	8.2
1975	75.8	21.7	41.0	8.3
1976	74.5	20.3	41.1	8.2

Source: U. S. Department of Labor, 1977 Employment and Training Report of the President, Washington, D. C.: U. S. Government Printing Office, 1977, Table A-4, pp. 142-143.

e = employment rate of individuals of age i in year t; equal to the age-specific labor force participation rate times one minus the unemployment rate,

L = number of people of age i in year t,

B = average benefits to persons of age j in year t, and

R = number of persons of age j in year t.

Individuals are assumed to be eligible for social security benefits at age 62 and entry into the labor force at age 16. No one lives longer than n years. An age-specific wage structure can be generated by setting $Y_{i+1,t} = Y_{it}$ (1+g) where g represents the wage gain from an additional year of work experience. Thus, tax revenues depend on the age structure of the employed population. The benefit structure will be determined by past legislative decisions that have governed retirement benefits.

Within the framework of the above-described model, equation 1 can be solved for the tax rate necessary to finance the desired level of benefits at any point in time. The required tax rate is determined by the population age structure, levels of labor force participation, and the generosity of the benefits. The primary focus of this report is to illustrate how the continuation of low fertility will affect the age structure of the population over the next fifty years, and therefore, the required tax rates. In addition, the significant influence of alternative retirement ages will be shown.

In order to simplify the analysis of changes in the tax rate over time, the following assumptions are made.

(1) All members of the labor force have the same annual earnings.

(2) All retirees receive the same benefits.

(3) Everyone enters the labor force at age 18 and retires at age 65.

In such a world, the tax is a function of the ratio of those 65 years old and older to those 18 to 64 and the benefit-wage ratio, i.e.,

$$2)\quad T_t = \left(\frac{B_t}{Y_t}\right)\left(\frac{R_t}{L_t}\right).$$

Holding $\left(\frac{B}{Y}\right)$ constant over time makes the tax rate a function solely of the ratio of beneficiaries to workers. In this model $\left(\frac{B}{Y}\right)$ serves the purpose of a replacement ratio; therefore, assuming it invariate is roughly consistent with the 1977 amendments. Table II indicates the changes in $\left(\frac{R}{L}\right)$ with replacement level fertility. Between 1976 and 2050 the population 65 and over rises as a percentage of workers 18 to 64 from 18 percent to over 30 percent. This will necessitate a tax increase of 67 percent. The magnitude of this increase is approximately equal to that forecasted in the 1977 Annual Report of the Trustees of the Trust Funds under their set of assumptions II if an adjustment is made for the rising replacement ratio in those projections.

Within the framework of our simple model, the rising tax rates are a function of the increasing number of beneficiaries per worker. In a more complex model, we could illustrate the following relationships.

*An increase in the labor force participation of those of working age reduces the tax per worker. Most projections of future

Table II. Age structure and related tax increases, 1977-2050 with replacement level fertility[a]

Year	R/L[b]	Tax for retirement benefits as a percent of 1976 tax	Tax if 1976 rate is 9.4 percent of payroll
1977	.1815	T	9.4[c]
1985	.1906	1.05 T	9.87
1990	.2003	1.10 T	10.34
1995	.2053	1.13 T	10.62
2000	.1994	1.10 T	10.34
2005	.1938	1.07 T	10.06
2010	.2016	1.11 T	10.43
2015	.2268	1.25 T	11.75
2020	.2599	1.43 T	13.44
2025	.2955	1.63 T	15.32
2050	.3023	1.67 T	15.70

[a] Fertility rate is assumed to rise to 2.1 births per woman and remain constant thereafter. Annual immigration is set at 400,000 (census projections, Series II).

[b] This fraction illustrates the number of individuals 65 years old and older divided by the population 18-64 in each year.

[c] Expenditures as a percent of taxable payroll for OASI as estimated in 1977 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds, p. 89.

Source: U. S. Bureau of Census, Current Population Reports, Series P-25, No. 704, "Projections of the Population of the United States: 1977 to 2050," U. S. Government Printing Office, Washington, D. C., 1977.

labor force participation indicate a continuing decline in the work effort of older men and a continuation of the rise in female participation. These conflicting trends are generally expected to produce a slight rise in the overall participation rate implying that the tax rise in Table II is a slight overestimation of the actual rise.

*A decline from the present relatively high rates of unemployment would raise the employed portion of the labor force and thus reduce the cost per worker of retirement benefits.

*To the extent that older workers remain employed, they provide additional taxes and may reduce total benefits paid (due to reduced benefits from the earnings test). Thus, further decline in the work effort of those over 65 raises the costs relative to the 1977 level.

*Growth in real wages would have no effect on the tax rate for the model illustrated in equation 2. Employing a more detailed model of age-specific benefits (see equation 1), it could be shown that a faster increase in the rate of growth of real wages lowers future costs because the benefits of previous retirees do not rise even though benefits of future retirees are adjusted upward to maintain a constant replacement ratio.

*If all of earnings are not subject to the payroll tax, a higher taxable ceiling could lower the tax rate. It must be pointed out that the demands for revenues to pay benefits remains unaffected. Thus, tax collections must rise even if the form of the tax is altered. This would also apply to any proposed shift to general revenue financing.

*The significant impact of fertility below the replacement level is depicted in Table III. If fertility were to remain at 1.7 births per woman, near its 1977 level, the ratio of retirees to workers more than doubles, rising to .39. As a result, the required tax increases by 214 percent, necessitating tax revenues to be approximately 20 percent of payroll. Thus, the future course of fertility will significantly determine the nature of the tax changes that will be forthcoming.

Table III. Age structure and related tax increases 1977-2050 with a fertility rate of 1.7 births per woman and annual immigration of 400,000

Year	R/L	Tax for retirement benefits as a percent of 1977 tax	Tax if 1976 rate is 9.4 percent of payroll
1977	.1815	T	9.4
1985	.1906	1.05 T	9.87
1990	.2003	1.10 T	10.34
1995	.2065	1.14 T	10.72
2000	.2025	1.12 T	10.53
2005	.2000	1.10 T	10.34
2010	.2122	1.17 T	11.00
2015	.2436	1.34 T	12.60
2020	.2862	1.58 T	14.85
2025	.3359	1.85 T	17.39
2050	.3878	2.14 T	20.12

Alternative Retirement Ages

The impact of changes in the age of retirement is reflected in shifts in the size of the population eligible for old age benefits and in the size of the labor force. For example, a reduction in the age of eligibility for benefits increases the number of people receiving benefits and produces a decline in the number of labor force participants. Obviously, as we have previously stated, not everyone withdraws from the labor force at the same age; however, alteration of the age of eligibility for social security benefits can be expected to lower significantly the labor force participation of the newly eligible group. The future elimination of the earnings test would result in all persons over the pensionable age being beneficiaries and further reduce the bias in this methodology.

The importance of retirement policy is dramatically illustrated in Table IV, which assumes that the entire population above the retirement age receives benefits at the 1976 replacement rate. As described earlier, a constant replacement ratio requires a steadily increasing tax rate so that by 2025 the proportion of payroll needed to finance retirement benefits will be 60 percent greater if 65 is continued as the age of eligibility. If, over the fifty-year period, 62 were established as the age for full benefits, at the same replacement rate costs would be more than doubled whereas a retirement age of 55 would require a tripling of the tax rate.

Considerable attention should be focused on the decline in the tax rate with a retirement age of 70. Even with the projected

Table IV. Payroll tax rates with constant benefit-earnings ratio and replacement level fertility

Retirement age	Year 1976	1985	1990	1995	2000	2005	2010	2015	2025	2050
55		2.22 T	2.18 T	2.18 T	2.23 T	2.41 T	2.67 T	3.02 T	3.42 T	3.42 T
62		1.35 T	1.39 T	1.39 T	1.35 T	1.36 T	1.46 T	1.65 T	2.11 T	2.10 T
65	T	1.05 T	1.10 T	1.13 T	1.10 T	1.07 T	1.11 T	1.25 T	1.63 T	1.67 T
70		.65 T	.69 T	.73 T	.74 T	.73 T	.69 T	.73 T	.97 T	1.08 T

population aging, the tax rate need be only slightly greater in 2050 if the retirement age were gradually raised to 70 years. Thus, a significant offset to the predicted increased tax rates is a higher age of eligibility for retirement benefits; however, we must guard against a continuation of the downward drift in age of withdrawal from the labor force.

The importance of retirement age on the cost of benefits is further illustrated in Table V. In 1977, a retirement age of 65 would require each worker to contribute 18 cents toward each one dollar in benefits per retiree. By contrast, an age of eligibility of 55 would have required a per-worker tax of 40 cents. The cost per worker declines with each increase in the retirement age until a pensionable age of 70 necessitates a contribution of only 11 cents for each dollar of benefit per retiree.

Table V. Tax per worker required to finance benefits with various retirement ages, 1977

Retirement age	Population (thousands)		Tax in cents per worker for $1 of benefits per retiree
	Retired[a]	Workers[b]	
55	43,837	108,717	40
60	32,793	119,761	27
62	28,976	123,578	23
65	23,431	129,123	18
70	14,991	137,563	11

[a] Everyone above the retirement age is assumed to be a non-working beneficiary.

[b] Everyone between 18 and the retirement age is assumed to be a wage earner subject to the uniform payroll tax.

Summary and Policy Recommendations

The continued aging of the population over the next half century will necessitate a series of alterations in our economic and social institutions. The Federal Government must begin to review systematically its legislative posture toward retirement. A coordinated national retirement policy is a necessity for a nation faced with the aging of its population.

This should not be construed to imply that we should focus narrowly on the social security program. Instead, the wide range of income and in-kind transfers to the elderly must be examined. Secretary Califano, in a recent speech before the American Academy of Political and Social Science estimated that this year expenditures on the elderly will total $112 billion or 24 percent of the federal budget in FY 1978. He projected that these costs will increase to more than 40 percent of total federal outlays in 2025.

Each of the programs constitutes a part of the nation's retirement policy because the availability of these funds influences the labor force decisions of older workers. The programs include OASDI, medicare, medicaid, SSI, civil service, railroad, and military pensions, housing subsidies, food stamps and other social and employment services. Regulation of these programs together with preferential tax treatment for pensions, ERISA guidelines, and mandatory retirement legislation form the basis of federal retirement policy.

In the future, Congress must give special attention to these programs and their effect on labor force activity. With population aging, incentives should be given to keep workers in the labor force and not, as presently is the case, to induce them to retire. Specifically immediate attention should be given to legislation raising the age of eligibility for social security benefits. This should be done gradually. For example, if it is desirable eventually to raise the retirement age from 65 to 70, it could be done over a twenty-year period, increasing the age of eligibility by three months each year. If such a program were to take effect in 1990, the retirement age would be 70 in 2010 just at the time the large tax increases would otherwise be required. It would be advantageous to enact such a provision into law as soon as possible so as to enable individuals to adjust to this rather significant change.

Although social security is the dominant program providing benefits to the elderly, numerous other programs should also be analyzed for their impact on the retirement decision. The effect of raising the age of eligibility for these programs should also be assessed. We must recognize that the elimination of these benefits for those 65-70 may necessitate some additional resources to support the disabled and others who are unable to continue in the labor force.

In summary, the age of eligibility for social security is a significant determining factor of the tax rate necessary to support any specific level of benefits. Higher taxes from a lower retirement age are due to an increased number of beneficiaries and a decreased working population. The model presented in this paper probably overestimates to some degree the sensitivity of the tax rate to changes in the age of eligibility. This occurs because even with a higher age required for pension benefits, some people will continue to withdraw from the labor force at earlier ages reducing the number of workers to tax. By the same token, a lower age of eligibility will not induce everyone now eligible for benefits to retire. However, the age structure patterns presented in this paper clearly illustrate the importance of the retirement age in determining future tax rates.

Reduction in future replacement rates is another method of moderating the projected rise in tax rates. Although not discussed directly in this paper, the framework described earlier clearly indicates that a lower replacement rate would permit proportionate reduction in tax rates. Thus, variable benefit levels could be compared to variations in the retirement age as possible offsets to further tax increases. These two methods are not mutually exclusive. For example, if the age for full benefits is raised to, say, 68, reduced benefits could be allowed at 65. The result, of course, is a reduction in the replacement rate of those who retire between 65 and 68.

The willingness of taxpayers to endure a continuing increase in payroll tax rates is now being demonstrated. Population aging will necessitate greater revenues in the future unless Congress acts to restructure the system in the form of an increased retirement age or lower replacement ratios. If fertility remains below the replacement level, this problem is considerably intensified. Therefore, I urge immediate consideration of legislation gradually raising the age of eligibility for full benefits beginning in 1990.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH
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STATEMENT

BY

ROBERT N. BUTLER, M.D.

DIRECTOR, NATIONAL INSTITUTE ON AGING

BEFORE THE

SELECT COMMITTEE ON POPULATION

OF THE

HOUSE OF REPRESENTATIVES

Thursday, June 1, 1978

Mr. Chairman and Members of the Committee:

Thank you for the opportunity to address this committee. It is rare that mankind has the opportunity to examine its future and plan for it as we do here today.

In a sense we are here as witnesses to a major shift in our population structure. The pop and youth culture characteristic of the '60s has now given way to a mature society. Probably for the first time in our nation's short 200 year history the pioneering spirit with its emphasis on explorations, youth and vigor has given way to a thoughtful assessment of what our country and our lives will be like after 2000.

Now, too, at long last in this century, we can really begin to speak of three generations, and even multigeneration families. At the time of the founding of our republic less than 4% of Americans lived within a three-generation family, and in the 17th century, only 20% of those born would live to be 70 years of age. It is now 87%.

In the year 1900, there were about three million Americans over 65. Today, that figure stands at roughly 23 million. This means that one in nine Americans are age 65 or older, with the expectation that in 30 years this rate will become one in six (Figure 1).

By the year 2030, the U.S. Census Bureau estimates that the over 65 population will peak at 52 million. Although the overall figures will increase, our population projections reflect our past history. The percentage of elderly will decline barely 1% between 1990 and 2020 to reflect fewer babies born during the Depression and World War II and then rise steeply as the post World War baby boom babies grows old (Figure 2).

Figures alone cannot convey the impact which the 'graying' of America has had and will continue to have on society. Yet they do illustrate the magnitude and urgency of the issues related to the health and well-being of our older population. The establishment of the National Institute on Aging as a part of the National Institutes of Health was in part stimulated by Congressional prescience in this matter.

NIA's broad mandate allows us to study all aspects of the aging process, with the ultimate goal of enhancing the quality of life through the application of research discoveries. This includes the social and behavioral sciences, as well as the traditional biomedical disciplines, because the problems of the aged are not only disease-related but are economic and psychosocial in nature.

We already know why there has been an increase in the numbers of persons over 65. Our aging population is the result of a combination of factors such as decreased infant and maternal mortality, major advances in the treatment and prevention of infectious diseases, and remarkable declines in the incidence of cardiovascular and cerebrovascular diseases both of which are leading causes of death in the elderly (Figures 3, 4, 5).

The Institute's epidemiology, biometry, and demography branch is in part designed, to answer questions about the elderly such as who are they; where are they; and what are their special health needs and problems.

The population over age 65 is not homogeneous. By far the fastest growing group are those over age 75. In 1900, there were 900,000 over 75; today there are nine million; by 2030 there will be 20 million (Figure 6). Of these, more than two million, most of whom are women are aged 85 or over. It is this group which faces the greatest economic, social, and health burden. Almost one in five of the 85 plus group are residents of institutions as compared to one in twenty for the 65 plus population as a whole (Figure 7). In general, at any one time ninety-five percent of the elderly are living in the community while only five percent are in nursing homes (Figure 8). Only 20% of all elderly ever have any nursing home experience.

In addition to the increasingly rapid growth of this portion of the population, the cost of health is rising at an even more staggering rate. Fifty-six cents out of every federal health dollar—a total of about $18 billion in 1976—was spent through Medicare and Medicaid on health care for the elderly. The judicious application of new knowledge acquired through research can do much to improve existing services and health care. Without new knowledge, we will continue to do the same things in the same ways while our health care costs continue to soar (Figure 9). Imaginative thinking about new ways to prevent disease and disability, support the family, and develop better systems of self-help and self-care may help us contain the spiraling costs.

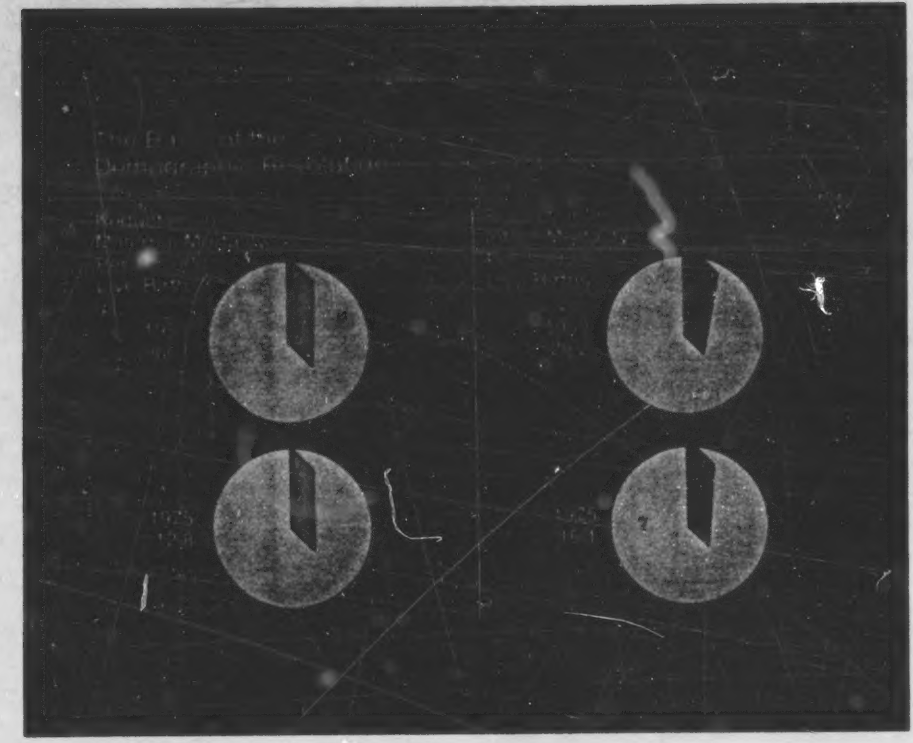
Although demographic trends show a tremendous growth in life expectancy, especially the proportion of population beyond age 80, this has been experienced by whites and women predominantly. Although women enjoy a longer life expectancy than men, they are thus more susceptible to multiple health and social problems (Figure 10 and 11). Today, one of every three females born will reach age 85, but fewer than one of every six males will attain that age. This is further complicated by the fact that women tend to marry men three years their senior and thus subject to an average of eleven years of widowhood. Differential life expectancy is evident among races as well as sexes (Figure 12) and represents one of NIA's research priorities. The study of the health related effects of grief, bereavement, and living longer than ones contemporaries are also areas of importance which greatly affect the quality of life of our elders.

Certainly, the participation of the elderly in the labor force is an important factor in terms of health and well-being. According to the U.S. Labor Department, a significant number of people over 65 continue to work although, in general, there has been a decline in the average age at retirement. In 1976, almost 4 million people over 65--17 percent of all elderly--remained in the labor force. There were, however, important differences among these older workers particularly in the regard to their marital status. It appears that labor force participation may be a matter of economic necessity, in spite of Social Security and Government support programs for the elderly.

Knowing who the elderly are is of critical importance in our health care and social welfare systems. In order to place services where they are most needed, we need to know where the elderly live or where they move. That Miami Beach may be a mecca for fleeing New Yorkers is obvious, but until recently, no comprehensive studies have been done on the migration patterns of the elderly. I am very pleased to be able to report that the first such study is being supported by NIA. The degree to which moves are health related or due to economic or other social factors such as retirement have yet to be determined.

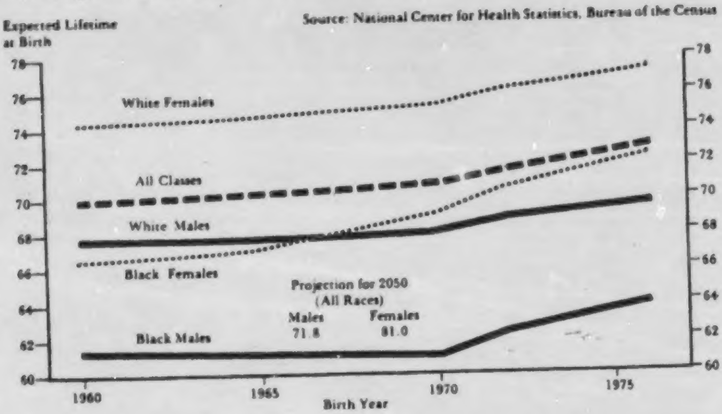
Let me conclude by emphasizing that research such as that conducted at NIA provides the most promising mechanism to control spiraling health costs. NIA is currently carrying out extensive studies in clinical and basic sciences such as metabolism, endocrinology, pharmacology, biochemistry, and nutrition in order to better understand the declines in body functions which occur with age, why these differ among individuals, and the methods best suited to control these declines.

It seems likely that with the fruit of current research the elderly Americans of the year 2030—who are alive and aging today—will be healthier and more active. Each day there is a net increase of some 1,400 elderly as 5,000 Americans join the ranks of the over 65 group and 3,600 die (Figure 13). It is crucial that we consider who the elderly are, where they are, and their special problems in shaping future health care policy. Hearings such as these offer us the opportunity to interact with Congress for the benefit of our elderly citizens.

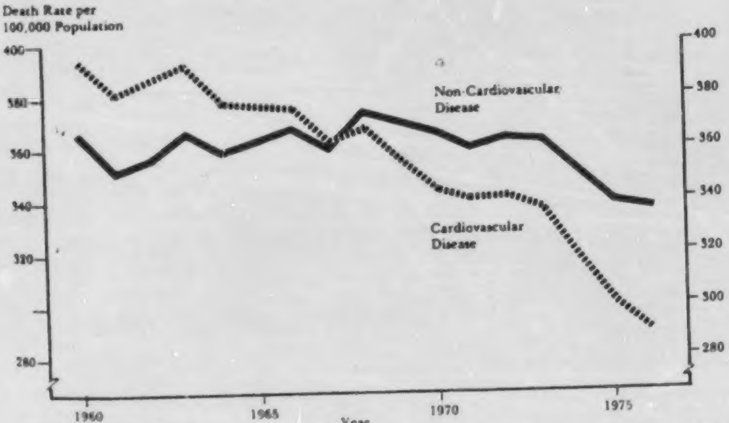


Life Expectancy at Birth by Birth Year, 1960-1976

Source: National Center for Health Statistics, Bureau of the Census



Cardiovascular* and Non-Cardiovascular Mortality Rates** (1960-1976)



Source: National Center for Health Statistics

*Excluding congenital heart disease
**Age adjusted to U.S. population 1940

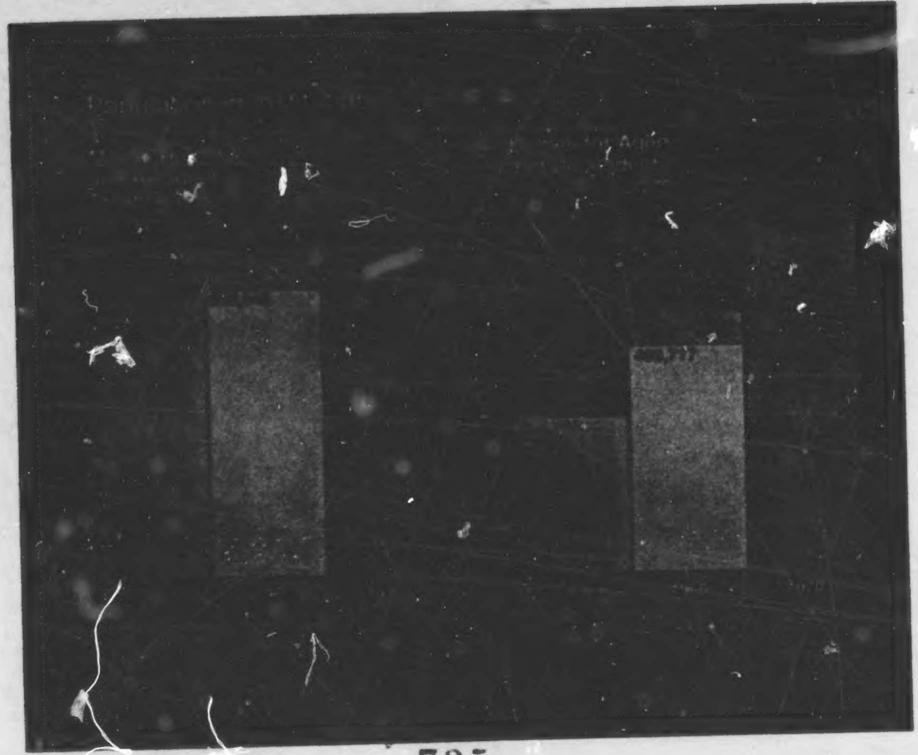
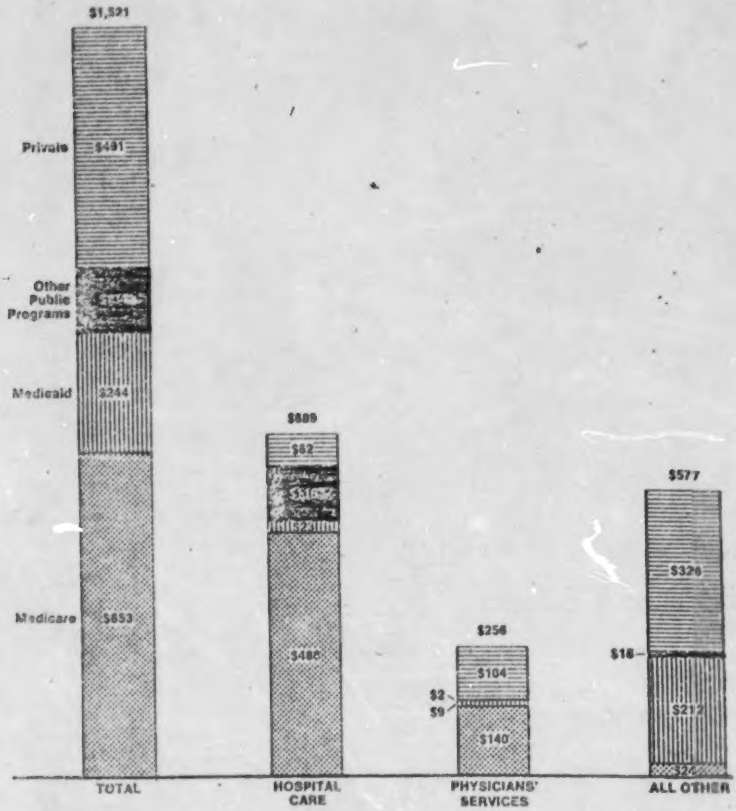


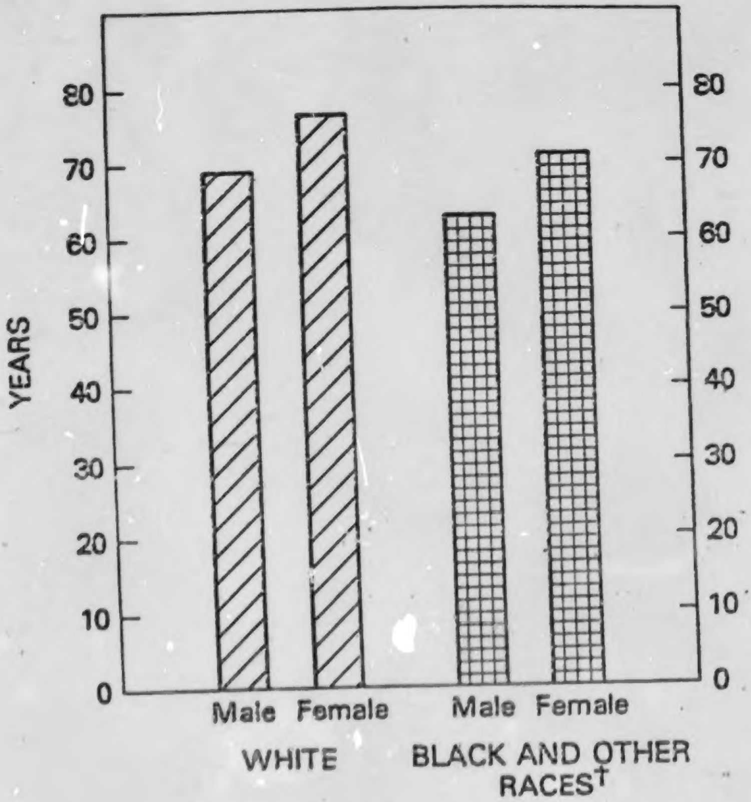
CHART 2.—Per capita personal health care expenditures for the aged, by source of funds and type of care, fiscal year 1976



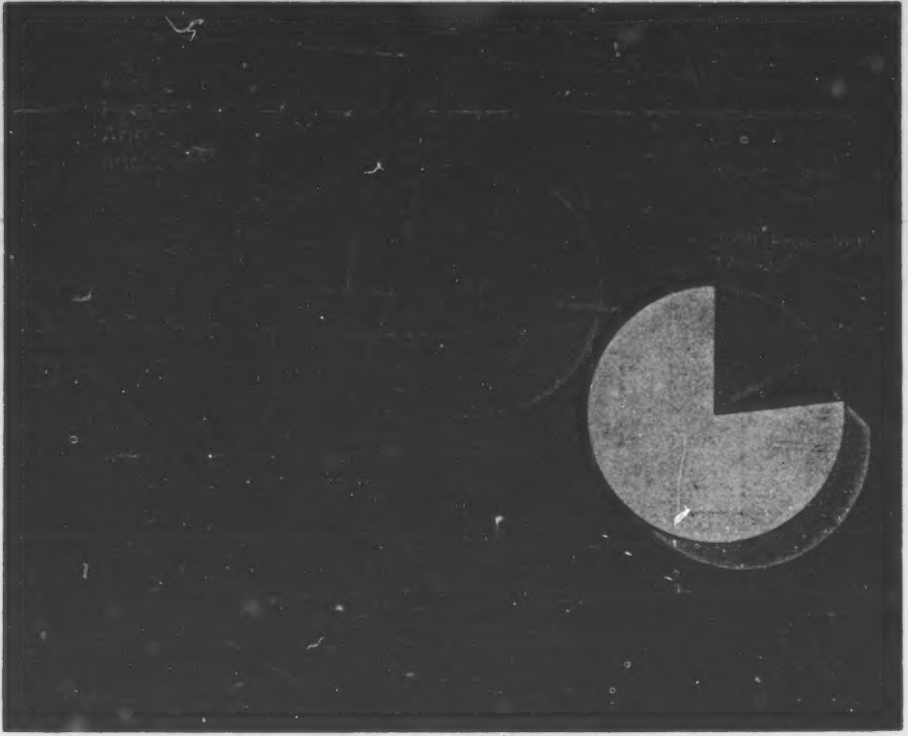
Life Span of Americans
How it has Lengthened

Age 40
Age 45
Age 75
Age 80
Age 85

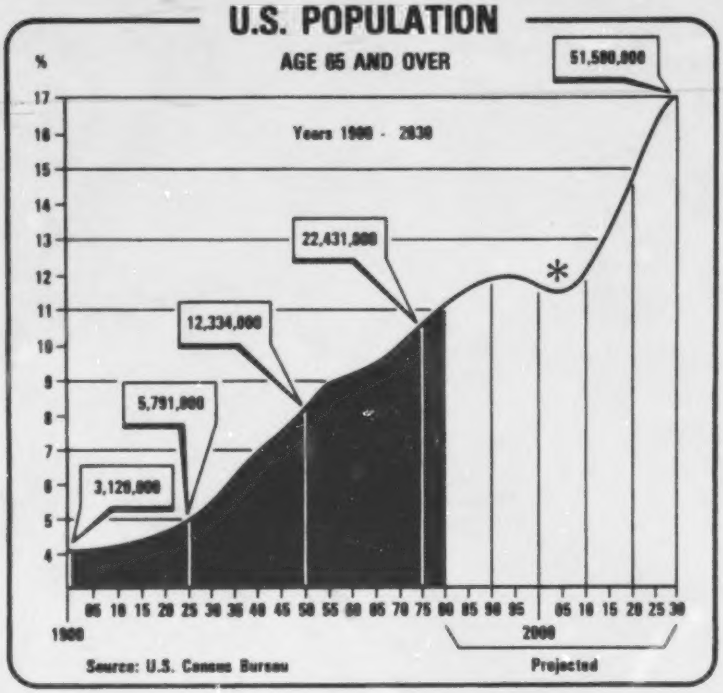
LIFE EXPECTANCY AT BIRTH*



*1974
†Black only for 1929-31 and 1900-02



National Institute on Aging
National Institutes of Health



AGE GAUGE – Chart shows the percentage of the American population 65 and older from 1900 to 1975, with predictions for 1980 to 2030.

* Decrease due to lowered birth rate during depression of 1930's.

WOMEN IN THE LABOR MARKET: PROSPECTS AND POLICIES

by

Isabel V. Sawhill
Director
National Commission for Manpower Policy

June 1978

This paper is a revised and updated version of an earlier paper prepared for the Joint Economic Committee, entitled, "On the Way to Full Equality" and published in American Women Workers in a Full Employment Economy, September 15, 1977.

WOMEN IN THE LABOR MARKET: PROSPECTS AND POLICIES

by

Isabel V. Sawhill

INTRODUCTION

The remarkable increase in the labor force participation of women and the accompanying changes in sex role attitudes which have taken place in recent years are altering the economy and the family in fundamental ways. The ultimate consequences for all of our institutions can only be dimly perceived but they are likely to be profound. The purpose of this paper is to briefly describe recent changes in women's commitment to work outside of the home, the most likely effects for the economy and the family, and the implications for policy.

RECENT TRENDS IN THE LABOR FORCE PARTICIPATION OF WOMEN

While only about one-third of adult women were in the labor force in 1950, by 1978 the figure was close to one-half. The most rapid increases have occurred among those groups who were least likely to be employed in the past: married mothers, especially those with pre-school age children. One result is that women with children are now more likely to work than those without them. In part, this reflects the fact that any social movement or trend is likely to affect the young disproportionately. Looking just at women, aged 25-34, the participation rate rose from 45 percent in 1970 to 61 percent in 1978. To me these trends suggest a whole new set of social expectations among the younger generation and indeed we have independent evidence of a marked shift in attitudes about "women's place," especially among the young and the well-educated.[1] The failure to factor these attitudinal shifts into projections of labor force participation rates has led the government to consistently underestimate the strength of past trends. For example, in 1973 the BLS published a set of projections that included a participation rate for women in 1980 that was exceeded in 1974.[2] There is work currently underway at the Urban Institute, under a grant from the Department of Labor, which is intended to rectify this situation.

The increased participation rates for women reflect both a greater tendency for women to seek paid jobs and a greater tendency to remain in the labor force more continuously. Moreover, women are more likely to work full-time, year-round than in the past. This reduction in turnover rates and greater commitment to full-time work has obvious implications for female earnings, occupational status, and unemployment rates which should increasingly approach those of males. However, at the present time all of these differentials are quite wide and have shown little tendency to narrow over time.

The increased labor force participation rates of women have been accompanied by a decline for men. In 1950, 86 percent of adult men were in the labor force. The proportion dropped to 77 percent in 1978, mostly due to later entry and earlier retirement but also reflecting a small decrease for men in the prime-age years as well. Eventually, the male and female participation rates may converge. A very simple (and thus not very defensible) extrapolation of past trends would suggest that such a convergence would occur when the participation rate was about 67 percent for each sex in the first decade of the twenty-first century. Another likely possibility is higher (but equal) participation rates for both sexes combined with shorter hours of work. Of course, if one believes that women will never fully relinquish, or men be willing to share, responsibilities for home and children, then some permanent although much smaller difference in participation rates may eventually be established. In any case, the future which emerges will depend on a variety of adjustments, including adjustments in policy, some of which are discussed below.

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[1] Karen Oppenheim Mason, John Czojka, and Sara Arber, "Change in U. S. Women's Sex-Role Attitudes, 1964-1974," University of Michigan, August 1975; Frank Mott, "The NLS Mature Women's Cohort: Socioeconomic Overview," presented at the Secretary of Labor's Invitational Conference on the National Longitudinal Surveys of Mature Women, January 26, 1978.

[2] D. F. Johnson, "The U. S. Labor Force: Projections to 1990," Special Labor Force Report 156, 1973, and C. T. Bowman and T. H. Morland, "Revised Projections of the U. S. Economy to 1980 and 1985," Monthly Labor Review, Vol. 99, March 1976, p. 9-21.

Macroeconomic Policy

Looking first at the overall level of demand, what are the chances that it will be sufficient to absorb a growing labor force? One idea, which appears to be an article of faith among much of the public, is that there are a fixed number of jobs in the economy and that if women get these jobs, men will suffer. This concern is reminiscent of the debate in the early 1960's about technological unemployment. It was argued then that machines were replacing human labor and that this would lead to chronic unemployment. Similarly, the new popular wisdom argues that as women move from home to market place, there will be a glut of workers competing for a limited number of jobs.

To begin, let us examine where there appears to be some basis for these concerns. First, it is true that rapid changes in the number of people seeking jobs are likely to overtax the short-run capacity of labor markets to absorb them. Even when there is a sufficient number of jobs in the aggregate, the difficult process of matching existing vacancies with the characteristics of job seekers is bound to leave some workers unemployed and some employers with unfilled vacancies. One cannot use an English teacher as a computer programmer (or vice versa). Secondly, future increases in the rate at which women participate in the labor force may not be correctly anticipated, and if underestimated, the result may be inadequate macroeconomic stimulus and a shortfall in aggregate demand. Full employment is a moving target; it takes a growing number of jobs to provide for a growing labor force, and women are currently the prime movers of the target.

But let us assume that the growth in the potential female labor force (i.e., the number of women who would want to work if the economy were at full employment) will be anticipated with some success and turn our attention instead to the adequacy of aggregate demand. It is, of course, the fear of inflation which inhibits the full utilization of macroeconomic measures to achieve or maintain full employment. While inflation can impose hardships on certain groups and lead to economic distortions, the costs of a sluggish or depressed economy may be even higher--both in terms of the lost output which idle workers could be producing, or in terms of the human costs associated with loss of income, impaired self-esteem, and disappointed aspirations. More importantly, there is increasing uncertainty about the relationship between unemployment and inflation and the efficacy of using some degree of slack in the labor market as a means of lowering the inflation rate. According to Gardner Ackley, for example, a one percentage point rise in the unemployment rate, maintained for one year, would only reduce inflation by between one-tenth and one-sixth of a percentage point.[3] Others contend that higher unemployment actually induces higher inflation due to the tendency of business to pass-through the higher costs associated with underutilized capacity.

It is often argued that the unemployment rate overstates the degree of slack in the labor market because many of the unemployed are women and teenagers moving between home, school, and work. It can also be argued that the official unemployment rate substantially underestimates the number of people needing jobs because of large numbers of discouraged or underemployed workers. A recent study by Professor Lee Rainwater, involving a sample of adult women in 8 European countries, found that 57 percent of all adult women not currently in the labor force would have preferred paid work. With the caveat that we don't know what kinds of jobs or wages they would find acceptable, this suggests a great deal more "underemployment" than unemployment in these countries and a similar situation probably prevails in the United States.[4]

The costs of not utilizing these underemployed resources are enormous. Large numbers of nonworking women, the vast majority of whom do not have young children to fully employ their time at home, increase the dependency ratio (the number of people who must be supported by the employed population) and reduce standards of living. In the future, increases in standards of living may have to come as much from reductions in the dependency ratio as from increases in individual productivity. These reductions in the dependency ratio will be made possible by (1) a decline in fertility, (2) an increase in the average age of retirement, and (3) an increase in female participation rates.

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[3] Gardner Ackley, Testimony before the Joint Economic Committee, June 15, 1978.

[4] Lee Rainwater, "Women's Employment Preferences and Participation in the CEC Countries," Joint Center of Urban Studies of Harvard University and M.I.T., November 1977. Also, see Eli Ginzberg, "The Job Problem," Scientific American, Vol. 237, No. 5, November 1977.

But where, some may ask, will the jobs come from to employ a higher proportion of the population? Most economists agree there is no trick to expanding total private or public output via tax cuts or increased government expenditures. How quickly, to what extent, and with what side effects this expansion in demand translates itself into an expansion in employment depends on the way in which labor markets respond. Concern with these questions has led to the search for more micro-oriented or selective measures.

Microeconomic Policy

There is increasing consensus about the need to supplement fiscal and monetary policy with a more selective set of employment or income (wage-price) policies. One can more successfully navigate between the Scylla and Charybdis of inflation and unemployment if an appropriate set of structural measures can be designed and implemented. On the employment side, these measures need to be targeted at groups with above-average unemployment rates: teenagers, women, and minorities. With the possible exception of minorities, one characteristic these groups have in common is a lack of recent labor market experience. Rather than move from one job to another, these groups must make the more difficult transition from school to work or from work in the home to work in the market. During periods of relatively full employment, people attempting these transitions usually account for about half of those who are out of work. In 1973, for example, when the total unemployment rate was 4.9 percent, the proportion of the unemployed who were new entrants or reentrants to the labor force was 46 percent.[5] Granted that this transition is difficult, that it affects women more than men, and that it becomes an increasingly important reason for unemployment as economic conditions improve, what can be done about the problem?

One approach would be to establish special employment programs for inexperienced workers--programs designed to ease the transition into the labor force. For example, special apprenticeships at below-market wage rates might be established in a wide variety of fields. The lower wages would provide an incentive for employers to hire and train inexperienced workers. The government's role could be confined to certifying the training component and duration of the programs, encouraging their development (perhaps through demonstration programs or modest subsidy of development costs), and removing possible barriers to the payment of below-market wages, including in some cases, wages below the legal minimum. This proposal has much in common with the idea of creating a youth differential in the minimum wage, except that it incorporates a more explicit training component and is targeted at all inexperienced workers, not just teenagers. Older women entering the labor force after a lengthy absence might be prime beneficiaries, for example. As with the minimum wage proposal, however, some concern would undoubtedly be voiced about the possible displacement effects for experienced workers and more thought would need to be given to the eligibility requirements for entry into the program and its possible direct and indirect effects.

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[5] Employment and Training Report of the President, 1976, Table A-25.

If properly structured, special apprenticeship programs could also help women to acquire the necessary on-the-job training to break into new fields. Certainly, women's future employment prospects are likely to depend as much on the composition of demand as on the overall rate of growth in economic activity. Thus, we need to know which occupations are likely to expand most rapidly, and whether women will be welcome in, and ready to move into, nontraditional fields. The existing occupational segregation of the male and female work force has been well-documented. It is the primary reason for women's lower pay and may also increase their unemployment. Although some of this segregation may be related to women's less continuous work history, a great deal of it appears to be a direct result of cultural stereotypes which affect both employers' and women's attitudes in a mutually reinforcing fashion.

To understand the importance of this issue for the future, assume for simplicity that the economy is divided into just two occupations; one (which we can call M) is reserved for men and the other (which we can call F) is reserved for women. Now assume that 5 out of every 10 new job openings are in M and 5 in F, but that 6 out of every 10 new workers coming into the labor force is female. Clearly, this would lead to an upward pressure on male employment and wage rates and a corresponding downward pressure on female employment and wage rates--unless women seek jobs and are permitted or encouraged to work in the male sector. Moreover, since the upward pressure on male wage rates is likely to be greater than the downward pressure on female wage rates (because of institutional rigidities which inhibit employers from cutting wages), such imbalances are likely to increase wages and prices, even before all resources are fully employed. Thus, occupational segregation makes it more difficult to simultaneously achieve full employment and price stability through macroeconomic measures.

The above scenario assumes that female jobs will not expand as rapidly as the female labor force. The reverse is also quite possible, but since the great majority of new workers will almost certainly be women, the demand-supply balance is likely to favor men unless there is rapid growth in the female sector of the job market or significant new job opportunities for women in nontraditional fields. Whatever the case, both a well-functioning economy and greater equality for women require breaking down the sex-typing of occupations. There will be debate about whether this is best accomplished through affirmative action programs, through counselling adolescent women, or through a general shift in socialization practices which affect even very young children, but probably all three will need to play a role. The time frames in which they will be effective are, of course, very different. Affirmative action programs may have the smallest direct impact but one which is at least immediate. Unfortunately, the historical effectiveness of these programs has been undermined by administrative inefficiency, the "inadequacy" of resources committed to enforcement, and a misallocation of these limited resources to the processing of individual cases rather than to rooting out endemic patterns and practices of discrimination.[6] If implemented properly, the longer-run effects of these equal opportunity programs are potentially great. The kind of incremental progress which is currently taking place under their auspices becomes the basis for a cumulative and more fundamental change in attitudes. Little girls will not aspire to be astronauts until some pioneering woman becomes the first occupant of a space ship and little boys will only be willing to work as secretaries if their fathers first show them the way.

One reason there is a critical need to find new strategies for dealing with the equal opportunity implications of seniority-based layoffs in periods of high unemployment is because relatively little new hiring takes place when the economy is depressed. And, since affirmative action has traditionally operated through the hiring process, progress for women and minorities is likely to be slowed, halted, or even reversed if few or no new hires are taking place. In short, even the best-enforced affirmative action programs will not be terribly successful in a no-growth economy.

Thus, we can conclude that women's successful integration into the labor market depends on the simultaneous pursuit of two goals. First, there must be a commitment to full employment and a growth rate adequate to absorb all those who wish jobs. And second, there must be a commitment to eliminate occupational barriers which lower women's earnings and employment opportunities and contribute to inflationary pressures. Pursuit of either of these goals in isolation from the other is likely to frustrate women's progress toward equality in the labor market. Their progress toward equality will also depend on the extent to which needed adjustments in, and redefinitions of, traditional sex roles occur and on the wisdom with which public policies impacting this broader area are designed. It is these policy issues to which I now turn.

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[6] Barbara R. Bergmann, "Reducing the Pervasiveness of Discrimination," in Jobs for Americans, Eli Ginzberg, ed. (Englewood Cliffs, N. J.: Prentice-Hall, 1976).

WHY EMPLOYMENT POLICIES ARE NOT ENOUGH

Although more employment opportunities are a necessary prerequisite if women are to achieve greater economic independence, they are not sufficient. Public policy must deal with the continuing reality of an uneven division of responsibilities between men and women for home and family life. It must also cope with the dislocations which a rapid change in the actual or perceived status of women imposes on individuals, laws, and social institutions. More specifically, the attention of the Congress and others might usefully be directed to four areas.

First, we need to develop policies which will help the growing number of two-earner families cope with their dual responsibilities at home and at work. Second, we must modify existing laws and policies which are obsolete because they assume female dependency as the norm. Third, we must simultaneously retain or design new policies which will protect those individuals (mostly older women) who disproportionately bear the costs of past discrimination or of having earlier adopted a socially-approved pattern of dependency. Finally, we cannot ignore those younger women, especially among the poor and less well educated, whose life chances continue to be constrained by their own often unintended or uninformed investments in more traditional roles, including very early childbearing, early marriage, or choice of an overcrowded "woman's" field, including "occupation housewife." Some discussion of these issues is an essential part of the policy debate surrounding the increased commitment of women to work outside the home. This commitment, and our evaluation of it, hinges on the ability of individuals and institutions, especially the institution of the family, to make the needed adjustments.

Coping with Dual Responsibilities at Home and at Work

As long as women have two jobs--one at home and one in the market--while men have only one, it will be impossible for women to compete on an equal basis with men in the labor market. A great deal of research has been devoted to showing the impact of women's more discontinuous and limited work experience, their constrained geographic mobility, and the shorter hours they work on their earnings and occupational status. Moreover, time budget studies suggest that women have less leisure, on the average, than men because of their dual responsibilities. And, perhaps most importantly of all, we need to be concerned about what will happen to children as fewer and fewer of them can count on the full-time care of one parent.

There are a number of possible solutions to the problems engendered by the double burden of job and family which so many women now face. One is greater male-female sharing of housework and childcare, with the division of responsibilities reflecting the true preferences and abilities of the individuals involved rather than being culturally predetermined. A second is a trend toward smaller families, increased childlessness, and a general de-emphasizing of home-centered activities. A third solution involves delegating the care of children and other household tasks to more specialized institutions: schools, day-care centers, commercial cleaning establishments, restaurants, etc. A fourth possibility would be to monetize the work which presently takes place within the family, perhaps providing salaries to all those who care for young children, as is currently done in Hungary, or providing vouchers which can be used for child care within or outside of the home. Finally, new ways of organizing work in the market--such as more flexible or shorter hours, more conveniently located work places, and less emphasis on transferring employees to new geographic locations--could help to meet the needs of two-earner families. In the confines of this paper it is not possible to even begin to lay out all the alternative policies which might be developed in these areas, their costs and benefits, and their ultimate impact on social institutions and people's behavior. Much more thought needs to be devoted to these questions. But it is important that all possible alternatives be looked at before social policy coalesces around any single approach or fails to recognize the need for multi-pronged strategies. One alternative, of course, is to do nothing new on the policy front. This alternative has its own set of implications (neglected children? declining fertility? lower female labor force participation? greater responsiveness of private markets?) which also need to be explored.

Modifying Existing Policies Which Are Based on Outmoded Assumptions About Sex Roles

The number of policies and practices that have fallen into this category are legion, although many are currently under attack or have been recently changed in response to feminist demands, new legislation, or challenges in the courts. Examples include fringe benefit and pension policies, child custody and support decisions in contested divorces, jury and military service, protective labor laws, credit granting practices, and so forth. Of particular significance, however, because they directly affect the economic position of all individuals and families, are our social security and income tax laws. Although these laws do not discriminate against women per se (except in the case of a few minor provisions), they are structured in a way which favors families in which there is a homemaking spouse over those with two earners. Thus, individuals who do not pursue a lifetime of marriage to one individual with each spouse performing their traditional roles are generally penalized.

More specifically, the social security system is plagued by two major problems. First, since the Social Security Act was initially introduced in the mid-thirties, the labor force participation of wives has increased threefold with the result that more and more women are paying social security taxes. Yet most face the prospect of receiving benefits no larger or only slightly larger than had they stayed home and contributed nothing to the system. As the number of two-earner couples increases, it is likely that they will eventually gain sufficient political strength to rebel against what is essentially a subsidization of households with dependent adults by those without them.

A second problem stems from the fact that women who devote their lives to homemaking are not insured as individuals but only as their husbands' dependents, putting them in a vulnerable position should their marriages end in divorce. If the "traditional" marriage is viewed as an equal partnership to which each spouse contributes valuable goods and services over some period of time, then they should both share equally in the retirement benefits provided by the husband's earnings over the same period. These retirement benefits need to be vested in the individual rather than being conditional on continued "employment" as one man's wife.[7]

On the income tax front, the principal issue is whether two couples, one consisting of two earners who receive $5,000 per year and one consisting of one earner who receives $10,000 per year, are equivalent for tax purposes. Currently, the tax system treats them as having equal ability to pay, ignoring differences in their work-related expenses or in their leisure time. It also tends to discourage wives from choosing market over nonmarket work (since only the former is taxed). Finally, because single individuals are eligible for lower tax rates than married individuals, two individuals who each have a career and thus benefit little from the income-splitting provisions of the current system, generally find that marriage increases their total tax bill.

A system of individually based income and payroll taxes (with no dependents' benefits) would go a long way toward removing the current inequities between one and two earner families. It would, of course, create incentives for people to marry or live together to the extent that such living arrangements are economically more efficient (that is, to the extent that two or more people can live together more cheaply than they can live apart). Such incentives may be entirely appropriate. Just as the tax system should encourage efficient living arrangements. We do not give tax breaks to people who have preferences for more expensive cars. Why then give tax breaks to people who, for reasons of privacy or autonomy, wish to live in the more "expensive" single-person household? On the other hand, an individually-based social security and income tax system would remove some of the advantages now afforded families with a nonemployed spouse: dependents' benefits under social security and the partial subsidization of homemaker services which income splitting currently provides. In effect, income splitting means that the government shares in the costs of supporting a dependent wife, as any affluent bachelor who takes on a nonemployed wife knows. Unless one wishes to encourage such dependency (perhaps because it is sometimes associated with the provision of child-care services), then this subsidization is not appropriate. However, some grandfathering in of current benefits and some mechanism to insure the dignity and financial independence of the homemakers of the future--although not necessarily at public expense--deserves further exploration.

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[7] Some alternative mechanisms for achieving needed reform in the social security system are currently being explored by Nancy Gordon at the Urban Institute.

In conclusion, one of the challenges in reforming social security and income tax laws is to eliminate current inequities between one- and two-earner families while simultaneously maintaining some protections for those who have devoted some or all of their lives to homemaking. We turn now to a more extended discussion of the relationship between public policy and the status of the homemaker.

Protecting the Homemaker

Full-time homemaking is the ultimate form of occupational segregation; very few men have ever chosen this career. Perhaps if it were not such an overcrowded and sex-linked field, it would have greater value and prestige. In the meantime, one cannot ignore the needs of women who have chosen this occupation as their life's work.

As long as a homemaker remains married she presumably contributes her services to the family and shares in the standard of living which her unpaid work and her husband's earnings provide. The financial support which she receives is compensation for services rendered. In this sense she is being "paid," although her "salary" may be largely determined by the success of her husband and only loosely related to her own efforts. The relationship between the two will depend on the extent to which her own home-based efforts contribute to her husband's success and on the extent to which competition in the marriage market matches higher-earning husbands with more accomplished wives. Both spouses may agree that it is best for the wife to devote her time to child care and other home-based activities while the husband specializes in earning the family income. Normally, this arrangement works well, but problems can occur for a number of reasons. First, because the arrangements are informal rather than contractual, each spouse must depend on voluntary compliance with the terms of the agreement. There is no legal recourse (except divorce) should either party be negligent in performing his or her assigned duties. This informality also tends to undermine the dignity and financial independence of the wife. Second, some husbands are not able to afford homemaking wives. As Carolyn Bell has reminded us, not every job can (or should) support a family.[8] And, as long as we have inequalities in earnings, this will continue to be the case. Where one income is insufficient, then it may be necessary for both spouses to work outside the home, leading to all the problems already discussed in connection with the two-earner family. A third and final problem occurs when women who have specialized in being wives and mothers find themselves "unemployed" in mid-career due to a husband's death, or more likely, as the result of a divorce or separation.

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[8] Carolyn Shaw Bell, "Should Every Job Support a Family," The Public Interest, No. 40, Summer 1975.

The climb in the divorce rate has been proceeding at an unprecedented rate. One result has been an enormous increase in single-parent families, especially those headed by women.[9] Between 1970 and 1975 alone, the proportion of all children under 18 living in single-parent homes rose from 12 percent to 17 percent and most of this increase can be traced back to rising marital instability. Nine out of every 10 of these children live with their mother, and 44 percent of these female-headed families are poor.[10]

Policies are needed then to protect women and children from the financial consequences of divorce. Most women who have devoted themselves to a homemaking career will not be able to earn enough to support their families. The least fortunate may be forced to turn to public assistance while the more fortunate may receive help from relatives or from their former husbands. But such support is not always forthcoming and it may be small in amount.

Based on new data from a national probability sample, we estimate that about 40 percent of the divorced, separated, and single women eligible to receive child support or alimony from the fathers of their children never receive such assistance. In addition, those who have experienced a history of some support, often receive payments irregularly or for a limited period of time.

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[9] Heather L. Ross and Isabel V. Sawhill, Time of Transition: The Growth of Families Headed by Women (Washington, D. C.: The Urban Institute, 1975).

[10] "Marital Status and Living Arrangements: March 1975," Current Population Reports, Series P-20, No. 287 (Census Bureau, December 1975). "Household Money Income in 1974 and Selected Social and Economic Characteristics of Households," Current Population Reports, P-60, No. 100 (Washington, D. C., 1975).

Looking at just those women who have received support in a given year, the mean amount of child support and alimony income is about $2,000 per family per year in 1973 dollars. Typically, this amount goes to support several children and meets about half of the family's subsistence (i.e., poverty level) needs. In a given year, only about 3 percent of all eligible female-headed families receive enough in child support and alimony alone to put them above the official poverty level for a family of their size and composition.[11]

Many women who have chosen to be full-time homemakers believe that divorce is unlikely (or always happens to someone else) and that when it does occur, child support or alimony will be paid. The facts cited here suggest that the risks are higher than commonly believed. As in the case of social security benefits, there may be a need to develop new policies and mechanisms which insure that homemakers receive their fair share of the return on an earlier investment in marriage and a husband's career. In principle, life insurance, social security, and alimony or child support all help to protect the homemaker from the "unemployment" which divorce or death are likely to bring. Perhaps in the future, we will find husbands with homemaking wives being asked to contribute to state unemployment compensation funds as well. Combined with education, retraining, counselling, and other services for the displaced homemaker, such protections could be a valuable buffer against the poverty faced by many female-headed families.

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[11] Carol A. Jones, Nancy M. Gordon, and Isabel V. Sawhill, Child Support Payments in the United States (Washington, D. C.: The Urban Institute, October 1, 1976).

Not all women who head families are the victims of a death or a divorce. Many are younger women whose economic plight is the consequence of unwanted childbearing at an early age. In general, younger women who have not yet decided whether to be homemakers, to have careers, or to combine both, face a very different set of circumstances than older women and their situation calls for a different kind of policy response.

Creating Options for Younger Women

Although traditional roles and occupations are not to be disparaged if freely chosen, we know that young women often enter them with little preparation, and with almost no knowledge of the alternatives or of the consequences of their decisions. Far more easily than in the past, young women can choose a variety of lifestyles. They have greater freedom to engage in sexual activity before marriage and to continue their education to relatively advanced levels. They have more control over the size of their families and a much wider range of occupational choices. If they seize on some of these new opportunities, new options will be created for men as well. But with these new options come the need to make harder decisions about sex, marriage, childbearing, and careers and to have better information about the consequences of various choices. Educators, the research community, government agencies and others have a special responsibility to make sure that the choices are both available and their implications understood. Furthermore, government programs themselves should be scrutinized with a view to determining whether they bias people's decisions in particular directions and whether these biases are desirable. A young woman, for example, who receives a government subsidy if she has a child out of wedlock but not if she marries, or has an abortion, faces what most people would consider an inappropriate set of incentives.

In general, the point is that one's life chances are often determined, or at least severely constrained, by decisions and events occurring at an early age. One of the most critical events in the life of a young woman is the birth of her first child. Depending on when and under what circumstances this birth occurs, she may drop out of school, leave the labor force, go on welfare, or abandon a career.

Some useful information has already been compiled by Kristin Moore and Steven Caldwell. One of their findings is that adolescent sexual activity is on the rise. Whereas about 64 percent of females born in 1950 engaged in sexual intercourse before age 20, 90 percent of those born in 1962 are expected to do so.[12] Unless offset by the increased availability and utilization of contraception and abortion, this will lead to more adolescent pregnancy and childbearing, much of it out of wedlock, with possible adverse consequences for the mothers, their children, and society. For example, pregnancy is the most frequent single reason that girls drop out of school. Data for 1972 indicate that 80 percent of the school-age girls who become pregnant leave school and never return to formal education. Although Title IX of the Education Amendments of 1972 forbids schools receiving federal money from excluding pregnant students, the heavy financial and personal demands of child care often result in school-age mothers never completing their educations. Naturally, the lack of education reduces the mother's earning potential. According to the best estimates available, at least 60 percent of the children born out of wedlock between 1954 and 1972 and not given up for adoption were on AFDC (Aid to Families with Dependent Children) in 1973.[13]

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[12] Kristin A. Moore and Steven B. Caldwell, Out-of-Wedlock Pregnancy and Childbearing, (Washington, D. C.: The Urban Institute, September 1976).

[13] Ibid.

Contraceptive use among young and unmarried people is distressingly inadequate. Among teenagers surveyed in a 1971 study, fewer than half used a contraceptive the last time that they had sex.[14] Moreover, only about 40 percent of the U. S. women estimated to be in need of subsidized family planning services actually obtained them in 1974.[15]

All this implies that the public and policy-makers need to acknowledge that teenagers are sexually active and in need of birth control services. Given the inadequate use of contraception, legal abortion may represent the best available option open to a woman with an unwanted pregnancy. For low-income women, financing of such abortions through Medicaid is essential.

Family planning and abortion are important not only because of their direct effects in preventing unwanted childbearing and its immediate consequences but also because they preserve so many other options. Economic independence for a young woman means a chance to delay childbearing until she has acquired sufficient education and experience to make an informed and conscious choice and has the resources to support a child either with or without the help of a male partner. It also means the right to know about the pros and cons of other alternatives, including careers in areas not open to women in the past. Whether such alternatives will actually be available will depend, in part, on the success of the employment policies discussed earlier. In this sense, we have now come full circle.

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[14] John Kantner and Melvin Zelnik, "Sexual Experience of Young Unmarried Women in the United States," Family Planning Perspectives, Vol. 4, No. 4, October 1972, p. 8.

[15] Alan Guttmacher Institute, New York, New York.

CONCLUSIONS

Without job opportunities, everyone's options are limited. At present, the overall unemployment rate is hovering around 6 percent. I can think of only two reasons for defining this as "full employment." One is fear of inflation; but this is more an argument for developing selective employment policies than for doing nothing at all. The creative design and implementation of such policies should be high on the public agenda. Tolerance of high rates of unemployment may also stem from assumptions about the welfare implications of this unemployment. People do not view the unemployment of a married woman in as serious a light as the unemployment of a male breadwinner, or the plight of a teenager unable to find his or her first job as equivalent to that of an experienced worker who has just lost a job. I do not believe we know as much about these welfare implications as most people assume. We do not have very good data on the income available to the unemployed nor is income the only measure of hardship or of longer term debilitating effects, some of which are noneconomic in nature. The result has been a tendency to look at unemployment rates by demographic categories and to assume that these categories are good proxies for economic need. The discussion would be more enlightened if we had a better understanding of why some groups have higher unemployment rates than others and of the seriousness of different types of unemployment for human welfare. Finally, whatever their effects on the distribution of income and welfare, high unemployment rates and the discouragement of labor force participation which accompanies them, imply a loss of real output to the economy and a corresponding reduction in standards of living. Many women, especially, are underemployed within the home. They have some valuable domestic tasks to perform, but I question whether these tasks fully occupy their time or energies once their children are grown or even in school. This hidden underemployment imposes a burden on everyone. In short, there would be more women working in a full employment economy, and a higher standard of living for all Americans.

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BIBLIOGRAPHY

Bell, Carolyn Shaw, "Should Every Job Support a Family?" The Public Interest, No. 40, Summer 1975.

Bergmann, Barbara R., "Reducing the Pervasiveness of Discrimination," in Jobs for Americans, Eli Ginzberg, ed. (Englewood Cliffs, N.J.: Prentice-Hall, 1976).

Bowman, C.T. and T.H. Morland, "Revised Projections of the U.S. Economy to 1980 and 1985," Monthly Labor Review, Vol. 99, March 1976, p. 9-21.

Brenner, M. Harvey, "Estimating the Social Costs of National Economic Policy: Implications for Mental and Physical Health, and Criminal Aggression," Joint Economic Committee, 1976.

Campbell, Angus, Philip E. Converse, and Willard L. Rodgers, The Quality of American Life: Perceptions, Evaluations, and Satisfactions (New York: Russell Sage Foundation, 1976).

Census Bureau, "Household Money Income in 1974 and Selected Social and Economic Characteristics of Households," Current Population Reports, P-60, No. 100 (Washington, D.C.: Government Printing Office, 1975); and "Marital Status and Living Arrangements: March 1975," Current Population Reports, Series P-20, No. 287 (Washington, D.C.: Government Printing Office, 1975).

Glick, Paul and Arthur Norton, "Perspectives on the Recent Upturn in Divorce and Remarriage," Demography, Vol. 10, No. 3, August 1973.

Hayge, Howard, "Families and the Rise of Working Wives--An Overview," U.S. Department of Labor, Bureau of Labor Statistics, Special Labor Force Report 189, 1976.

Johnson, D.F., "The U.S. Labor Force: Projections to 1990," Special Labor Force Report 156, 1973.

Jones, Carol A., Nancy M. Gordon, and Isabel V. Sawhill, Child Support Payments in the United States (Washington, D.C.: The Urban Institute, October 1, 1976).

Kantner, John and Melvin Zelnik, "Sexual Experience of Young Unmarried Women in the United States," Family Planning Perspectives, Vol. 4, No. 4, October 1972, p. 8.

Kreps, Juanita M., "Some Time Dimensions of Manpower Policy," in Jobs for Americans, Eli Ginzberg, ed (Englewood Cliffs, N.J.: Prentice-Hall, 1976)

Mason, Karen Oppenheim, John Czojka, and Sara Arber, "Change in U.S. Women's Sex-Role Attitudes, 1964-1974," University of Michigan, August 1975.

Moore, Kristin A. and Steven B. Caldwell, Out-of-Wedlock Pregnancy and Childbearing (Washington, D.C.: The Urban Institute, September 1976).

Ross, Heather and Isabel V. Sawhill, Time of Transition: The Growth of Families Headed by Women (Washington, D.C.: The Urban Institute, 1975).

Smith, Ralph E., "The Impact of Macroeconomic Conditions on Employment Opportunities for Women," prepared for the Joint Economic Committee's Series on "Achieving the Goals of the Employment Act of 1946--Thirtieth Anniversary Review."

Smith, Ralph E., "Unemployment and Labor Force Growth," Urban Institute, October 1976.

Taeuber, Karl E. and James A. Sweet, "Family and Work: The Social Life Cycle of Women," in Women and the American Economy, Juanita M. Kreps, ed. (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1976).

U.S. Commission on Civil Rights, "Last Hired, First Fired: Layoffs and Civil Rights," draft report, October 1976.

Ackley, Gardner, Testimony before the Joint Economic Committee, June 15, 1978.

Rainwater, Lee, "Women's Employment Preferences and Participation in the CEC Countries," Joint Center of Urban Studies of Harvard University and M.I.T., November 1977.

Ginzberg, Eli, "The Job Problem," Scientific American, Vol. 237, No. 5, November 1977.

The Effect of the Youth Population on the Wages of Young Workers*

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June 2, 1978. Testimony before the Select Committee on Population,
U.S. House of Representatives

*Adapted from "The Effect of Demographic Factors on the Age-Earnings Profile in the U.S."

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The age structure of the U.S. work force underwent significant changes in the late 1960s and early 1970s and will, because of demographic factors, undergo equally sharp but opposite changes in the 1980s. From 1966 to 1976 the number of male workers aged 20-24 increased from 6.1 to 8.2 million and the number aged 25-34 from 10.8 to 14.5 million. The number of female workers aged 20-24 and 25-34 grew even more rapidly, from 3.6 and 4.5 million in 1966 to 6.1 and 8.5 million in 1975. The increased number of young workers so outstripped the growth of the overall work force that the ratio of workers 25-34 to those 35 and over jumped by 43 % among men and by 76 % among women in the period. Because of the increased flow of young persons into college the proportion of college workers below 35 rose especially sharply, from 34% of the college work force in 1966 to over 50% in 1976 among men and from 45% to 61% among women.[1]

What are the economic effects of such significant demographic developments? Does an increase in the relative number of young workers change the age-earnings profile against the young? How does the market adjust to dramatic swings in the age-composition of the labor force? What are the implications of the demographic burst of the late sixties and 1970s for the 1980s, when the number of young workers is expected to decline (U.S. Bureau of the Census)?

One of the most important determinants of the response of the market to changes in the relative number of young persons is the elasticity of substitution between various age groups. If the elasticity between younger and older workers is very large, the market will be able to "absorb" significant demographic ups-and-downs relatively easily. If the elasticity is small, sizeable changes in relative wages are needed to clear the market.

This paper examines the way in which the wages adjusted to the sizeable increase in young persons in the 1960s and 1970s and provides estimates of the substitutability of younger for older workers. The principal finding is that the demographic changes appear to have caused a major twist in what has previously been viewed as a relatively stable economic relation, the age earnings profile of male workers. Because young and older male workers are imperfect substitutes, the increase in the relative number of young workers reduced their income relative to that of older workers, particularly among the college trained. Whether the relative decline in earnings will persist as the large cohort of the decade ages, creating a lifetime "size of cohort" effect remains to be seen.

The dependence of the age-earnings profile on demographically-induced movements along a relative demand schedule suggests that standard human capital models of the profile, which posit that earnings rise with age or experience solely as a result of individual investment behavior are incomplete, capturing at most the supply side of the story to the neglect of demand factors. The large impact of cohort size on earnings and noninfinite elasticities of substitution among age groups found in this study implies that human capital is not a homogeneous input with a simple rental price, whose "units" of investment determine the age-earnings profiles. Differences in the activities of young and old workers and the underlying demand forces for those activities decisively influence the shape of the profile. To understand the relation between earnings and age, it is necessary to analyze the demand for workers by age and employer personnel policies and behavior as well as human capital investment decisions.

The paper is divided into four sections. The first documents the demographic shift which provides the "experiment" from which estimates of substitution by age groups can be made. Section II presents evidence of a sizeable "twist" in the age-earnings profile against young persons in the period. Section III examines the extent to which the shift in the age-earnings profile can be attributed to the demographic changes. The paper concludes with a brief consideration of the significance of the findings

I. The Changing Age Structure of the Work Force

From the late 1960s through the mid 1970s, the U.S. labor force experienced considerable change in its age structure. Because of the "baby boom" that followed World War II and peaked in 1956, the number of young persons in the work force rose considerably. Because an unprecedented proportion of the young chose to go on to college, the number of young college graduates increased especially rapidly. Given the high labor participation rate of men out of school, the demographic and educational developments translated into a major shift in the supply of young male workers relative to other male workers. Among women changes in female participation rates coupled with demographic developments to produce an even larger shift in the age structure of the female work force.

The broad outline of the demographic revolution in the job market is examined in Table 1, which records the absolute and relative number of workers aged 20-24 and 25-34 from 1966 to 1976. What stands out in

TABLE 1: THE CHANGED AGE STRUCTURE OF THE WORK FORCE, 1966 - 1976

	Total Work Force, by Age				College Work Force, by Age				High School Work Force, by Age			
	Numbers (in thousands)		Relative to 35+		Numbers (in thousands)		Relative to 35+		Numbers (in thousands)		Relative to 35+	
	20-24	25-34	20-24	25-34	20-24	25-34	20-24	25-34	20-24	25-34	20-24	25-34
A. Male Workers												
1966	6,139	10,761	.201	.352	280	1,067	.129	.490	2,057	3,929	.249	.475
1968	6,788	11,376	.221	.371	290	1,137	.131	.514	2,066	4,220	.232	.473
1970	7,378	11,974	.241	.391	376	1,200	.161	.514	2,324	4,529	.248	.483
1972	7,795	12,806	.257	.423	567	1,393	.232	.569	2,772	4,792	.288	.497
1974	8,105	13,993	.270	.465	583	1,725	.222	.655	3,011	5,110	.289	.507
1976	8,421	14,990	.282	.502	686	2,203	.242	.779	3,334	6,309	.330	.525
% change 1966-76	37.2	39.3	40.2	42.6	145.0	106.5	84.7	59.0	62.1	60.5	42.2	11.0
B. FEMALE WORKERS												
1966	3,601	4,516	.220	.276	331	444	.352	.472	1,879	2,063	.311	.342
1968	4,231	5,104	.251	.301	436	526	.397	.479	2,104	2,358	.317	.356
1970	4,893	5,704	.276	.322	515	614	.483	.576	2,400	2,764	.322	.371
1972	5,337	6,525	.298	.365	620	801	.540	.698	2,593	3,068	.331	.392
1974	5,867	7,826	.322	.430	699	1,101	.565	.890	2,598	3,452	.319	.424
1976	6,339	9,183	.336	.487	757	1,388	.565	1.04	2,935	3,958	.346	.466
% change 1966-76	76.0	103.3	52.7	76.4	128.8	212.6	60.5	120.3	56.2	91.9	11.3	36.3

All workers data compiled from U.S. Department of Labor, Employment and Training Report of the President, transmitted to Congress 1977, Table A-2, p. 137.
Workers by education data compiled from U.S. Department of Labor, Bureau of Labor Statistics, "Educational Attainment of Workers," Special Labor Force Reports, various editions.

the table is the remarkable increase in the absolute and relative number of young workers, particularly college graduates. Taking male workers first, Panel A shows an increase in the number aged 20-24 and 25-34 of over one-third and, because of a decline in the number of male workers 35 and over, an even larger rise in the ratio of younger to older workers. Decomposed by education, the table shows that the growth in the number of young workers was highly concentrated among college graduates, with the number of 20-24 and 25-34 year old college men more than doubling in the decade.

Because the labor participation rate of young women rose rapidly in the late 1960s and 1970s, the growth of the female work force under thirty-five years of age was even more remarkable. According to the figures in Panel B, the number of female workers aged 20-24 increased by 76% while the number aged 25-34 increased by 103%. These gains outstripped the rate of increase of the older female work force by sufficient magnitudes to raise the ratio of 20-24 to 35+ year old female workers by 53% and the ratio of 25-34 to 35+ year old workers by 76%. Among college workers, the number of young women increased exceptionally sharply, with the number aged 20-24 more than doubling and the number aged 25-34 more tha tripling in the period! While less dramatic, the absolute and relative nubmer of young female high school graduate workers also rose, particularly for thosein the 25-34 bracket.

Data on new graduates from high schools and colleges and, more importantly the number of graduates entering the labor market tell a similar story. In 1960 there were 26.8 new high school graduates per thousand persons in the civilian labor force; in 1970 34.3. According to Bureau of Labor Statistics figures on employment of high school graduates and dropouts (B.L.S.), 10.1 new high school graduates entered the job market per thousand members of the labor force in 1960 compared to 14.3 per thousand in 1972. For college graduates the picture is more complex, as the tendency to enroll for graduate studies in the 1960s delayed the impact of the large classes on the market until the following decade. From the late 1960s to the mid 1970s, the ratio of new bachelor's graduates on the market to the civilian labor force roughly doubled.[2]

Because graduate data refer to flows rather than stocks of persons in a wide age grouping, they reveal further the beginning of the decline in the number of young workers which will mark the 1980s. Numbers of high school and college graduates levelled off and began to drop relative to the labor force in the mid-seventies. The demographic change from large numbers to small numbers of young persons is already beginning.

The sharp burst in the number of young persons provides the type of exogenous (or in the case of persons by level of education pre-determined) "shock" to the economy that would be expected to alter the relative incomes of the young. While not a "classical experiment" the changes can be viewed as offering a reasonably strong test of whether the age-earnings relation does or does not depend on factors beyond investments in training. Was the change in supply accompanied by changes in relative wages?

II Changes in the Relative Earnings of Young Workers

Evidence on earnings by age from the Current Population Survey of the Bureau of the Census provides an answer to this question. The CPS data show that for groups of workers with traditionally steep age-earnings profiles, notably college educated men and to a lesser extent other male workers, the late 1960s-1970s demographic changes were accompanied by a substantial "twist" in the age-earnings profile against the young. By contrast, there was no such change in the age-earnings profile for groups of workers with traditionally flat profiles, such as women. While other factors (to be explored in section III) may have also been at work, the concatenation of increases in relative numbers and decreases in relative wages in the period is highly suggestive of movement along a negatively sloped demand curve, with a moderate elasticity of substitution between workers of different ages.

The available aggregate evidence on the relative income of young workers is summarized in Table 2, which records the ratio of the mean income of 45-54 year old to 20-24 and 25-34 year old workers, by sex and education.[3] The table covers the period 1968 to 1974, when the Census data were calculated on a comparable basis and also gives figures for 1975 when the Census made major changes in its method of compilation. For comparability, the 1975 figures are based on percentage changes of incomes for groups defined on the 1974 basis. The source of data and method of adjustment are described in the table notes. The table records the annual mean incomes of all workers (columns 1-3) and the mean incomes of year-round full-time workers (columns 4-6). The former cover larger groups, including those unemployed during the year, and will be more sensitive to cyclic factors, such as the movement from boom to bust in the 1968-75 period. The figures for year-round full-time workers relate to a more limited group (61% of males 25 and over and 31% of female workers in 1975)[4] but have the advantage of providing better measures of wage rates and being potentially less "contaminated" by cyclic changes in unemployment. Among women, the sizeable number of part-time workers and significant non-wage incomes makes interpretation of the incomes for all workers complex, suggesting that attention be focused on year-round full-time employees.

The ratios of incomes show a remarkable increase in the premium paid older male workers, which is most pronounced among college graduates. In 1968 men aged 45-54 working year-round full-time earned 74% more than year-round full-time men aged 20-24; in 1975 they earned 100% more.

Table 2: Ratio of the Mean Income of 45-54
Year Olds to Younger Workers, 1968-1975

Sex, Age & Education Group	Income of Year-Round Full-Time Workers			Total Incomes		
	1968	1974	1975[a]	1968	1974	1975[a]
Males						
1. All, 20-24 years old	1.74	1.99	2.00	2.30	2.43	2.50
2. All, 25-34 years old	1.18	1.25	1.26	1.18	1.26	1.23
3. H.S. Grads., 25-34 years old	1.20	1.23	1.31	1.21	1.24	1.30
4. College (4 year) Grads., 25-34	1.38	1.61	1.63	1.43	1.70	1.62
Females						
5. All, 20-24 years old	1.21	1.35	1.33	1.38	1.49	1.48
6. All, 25-34 years old	1.00	1.01	0.99	1.16	1.10	1.05
7. H.S. Grads., 25-34 years old	1.07	1.08	1.05	1.24	1.19	1.13
8. College (4 year) Grads., 25-34	1.05	1.14	1.17	1.35	1.28	1.22

Source: U.S. Bureau of the Census, Current Population Reports, Consumer Income Series P-60, No. 66, tables 39, 41; No. 101, tables 53, 59; No. 105, table 47.

[a] 1975 based on unpublished Census data which gives incomes in 1974 and 1975 on a comparable basis. As discussed in Series P-60, No. 105, the Census used a different imputation procedure for estimating incomes in 1975. The new procedure tends to bias upward the earnings of more educated and older workers.

In 1968 year-round full-time college men aged 45-54 earned 38% more than their 25-34 year old peers; in 1975 63% more. Similar patterns are found in the total income data, with the largest change also among college workers.

The situation for women is radically different, with some evidence of an increase in the curvature of the age-income profile for 45-54 year olds versus 20-24 year olds and for 45-54 year old versus 25-34 year old college women in year-round full-time incomes, but with little change otherwise. The relative income of older women tended to fall in terms of total incomes, possibly as a result of the growth of the part-time older women work force. Presumably because of the flat cross-section age-earnings profile and distinct work experience patterns of women, the demographic changes appear to have had little effect on the curvature of the age income profile of women.

III Results of Detailed Statistical Analysis

The decline in the relative earnings of young workers can be analyzed in greater detail using more advanced statistical models. The results of such an analysis, contained in the detailed paper of which this is a summary, show:

1) Between 1968 and 1975, the earnings of 18-24, 25-29, and 30-34 year old college men dropped relative to those of aged 45-54 by large statistically significant amounts, ranging from about 18% to 27%. Smaller declines, on the order of 6-9% occurred for high school men in those age brackets relative to older high school men.

2) While the recession has had some impact on the relative economic position of young workers, reducing their earnings relative to those of older workers, analysis of labor demand shows that the bulk of the decline can be attributed to movements down a demand schedule due to the increased number of young workers. Other factors, including the increase in the capital

stock and number of female workers appear to be of secondary importance in the observed changes:

change in relative incomes ($\dot{W}_y-\dot{W}_0$) 1968-74	-.07
due to increased number of young men ($\dot{L}_y$)	-.08
due to changed number of older men ($\dot{L}_o$)	.01
due to changed number of female ($\dot{L}_w$)	.01
due to changed number of capital ($\dot{L}_k$)	-.01

IV Conclusion

The analysis in this paper has shown that during the 1970s period when the relative number of young workers increased rapidly their relative income dropped substantially. The decline was limited to male workers and was most severe for college graduates, for whom the age earnings profile is traditionally steep. While the time series patterns do not provide unequivocal results, analysis of the link between the relative income of young men, the demographic change in the age structure of the work force, the state of the business cycle, and other possible determinants of the relative demand for younger as opposed to older male workers, suggest that the increased relative number of workers reduced relative earnings along a downward sloped demand curve. With a constant elasticity demand equation, 50% of the decline in the year-round full-time income of 25-34 year old men relative to 45-54 year old men from 1968 to 1974 and 60% of the decline in the relative income of 20-24 year old men relative to 45-54 year olds was attributed to the changed relative numbers. With the derived demand equations of the translog system all of the change in the total income of 20-34 year old men relative to men 35 and over was attributed to the increased number of young male workers.

The twist in the age-earnings profile in the period raises important questions about the impact of cohort size on earnings and the completeness of the human capital story of cross-sectional profiles. Will the relatively depressed position of the large young cohorts of the 1970s be maintained in the future, producing significant generational income inequality? Will the age-earnings profile change in favor of the young in the 1930s, when the demography shifts toward fewer young persons? To what extent do cross-section profiles reflect cohort effects, as opposed to investments in human capital?

Agruments can be advnaced both for and against the likely permanence of a 'cohort effect' for the young workers of the 1970s and the potential improved position of the young of the 1980's. Cohort effects are likely to be maintained if personnel policies produce 'standard increases' on initial rates of pay and promotion by seniority or age along well-defined job ladders. Cohort effects may grow if the young in the 1970s have been forced into jobs with flatter longitudinal profiles than are normally chosen by new entrants and if future promotions and raises will be adversely affected by a potentially large pool of competitors from the same age group. On the other hand, if the low initial earnings of persons in the 1970s are given a strict investment interpretation, they indicate greater investments in on-the-job training than in the past, presumably through selection of "learning jobs" which will show up in especially steep longitudinal profiles for this cohort in the future. The likelihood that substitution among workers of different ages increases with age suggests at least some diminution in the effect of cohort size over time (see Welch for a valuable discussion of these possibilities).

Limited evidence on cohort earnings profiles in the past and the jobs held by the new entrants of the 1970s suggests some permanent effect. Ruggles and Ruggles' analyses of the LEED data file revealed a noticeable drop in the longitudinal profile for the cohort which entered the labor force in about 1930, apparently because 'the labor market conditions at the time of their entry had a significant depressing effect on their earnings, relative to those who preceded them and were already established in the labor market.' By contrast, the cohort born a decade later were 'high relative to the cohorts surrounding them and seem to have enjoyed this advantage continuously' (p. 124). Chamberlain's evidence on the return to schooling from a fixed young cohort addresses directly the possibility that the relatively depressed position of young college compared to high school graduates is a temporary phenomenon due to greater investments in on-the-job training. He presents estimates of the return to schooling at the "overtaking point," when earnings are no longer depressed by investments, which give a drop from 12% in 1969 to 7% in 1973. Finally, the marked decrease in the proportion of new college graduates in professional and managerial jobs, where the profiles are traditionally the steepest, also argues against the investment interpretation. On the basis of current information, it appears more likely that the large cohort of the 1970s will suffer a significant loss in relative economic position compared to the cohorts that preceded them and to the smaller cohorts that will enter the market in the 1980s than that they will rapidly or completely recover their earnings position.

Footnotes

[1] All of the data in this paragraph are from U.S. Department of Labor, Employment and Training Report of the President 1977 table A-2, p. 137 and from U.S. Department of Labor, Bureau of Labor Statistics, "Educational Attainment of Workers" Special Labor Force Reports, various editions.

[2] See the estimates given in R. Freeman, The Overeducated American (Academic Press, 1976

[3] Because of the complex labor force behavior of teenagers and the role of the minimum wage and other factors on their earnings, this analysis concentrates on the age-earnings relation for persons 20 years and over.

[4] As reported in Bureau of the Census, Current Population Survey, Consumer Income Series P-60, no. 105.

References

Anderson, J. Harvard University Dissertation, 1977.

Berndt, E., and L. Christensen. "The Translog Function and the Substitution of Equipment, Structures and Labor in U.S. Manufacturing, 1929-1968." *Journal of Econometrics* (1973), pp. 81-114.

Binswanger, H. "A Cost Function Approach to the Measurement of Elasticities of Factor Demand and Elasticities of Substitution," *American Journal of Agricultural Economics* (May, 1974), pp. 377-386.

Cartter, A. *Ph.D.'s and the Academic Labor Market* (Carnegie Commission, McGraw-Hill, 1976.

Chamberlain, G. "Omitted Variable Bias in Panel Data: Estimating the Returns to Schooling," Harvard Institute of Economic Research Discussion Paper 618 (May 1978).

Musgrave, John (1976). "Fised Nonresidential Business and Residential Capital in the United States, 1925-1975," Survey of Current Business, Vol. 56, June. 1976.

Ruggles, N.D. and Ruggles, R. "The Anatomy of Earnings Behavior" in *The Distribution of Economic Well-Being* (ed. F. T. Juster), NBER, 1977.

Sato, R. and Koizumi, A. "On the Elasticities of Substitution and Complementarity" *Oxford Economic Papers* 22, Nov. 1970, 289-96.

U.S. Bureau of the Census, Current Population Reports *Consumer Income* Series P-60, various editions.

U.S. Bureau of the Census, *Trends in Income of Families and Persons in the U.S. 1947-1960*.

U.S. Department of Labor, *Employment and Training Report of the President 1976*.

U.S. Department of Labor, Bureau of Labor Statistics, "Educational Attainment of Workers," Special Labor Force Reports, various editions.

U.S. Department of Labor, Bureau of Labor Statistics, "Employment of High School Graduates and Dropouts," Special Labor Force Report, various editions.

U.S. Department of Labor, Bureau of Labor Statistics, *Work Experience of the Population*, 1969.

U.S. Office of Education, *Earned Degrees Conferred*, *Digest of Educational Statistics*

Welch, F. unpublished paper delivered at Cambridge University Conference on

POPULATION CHANGE AND THE AMERICAN LABOR MARKET: 1950-2000

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INTRODUCTION

The demographic composition of the American labor force has shown great variation historically. Due to changes in the U.S. age structure--primarily the result of fluctuations in the fertility rate--and changes in labor force participation patterns of age-sex groups, there has been considerable fluctuation in the age-sex structure of the labor force. Fertility changes that have occurred during the past fifty years assure that change in the composition of the labor force will continue for the next half century. Table 1 shows the age-sex composition of the U.S. labor force for selected years in the past and forecasts for future years.

I have been asked to discuss the effects of changes in age structure on the United States labor market. This statement is in three parts. The first part discusses the possibilities for substitution among the various age groups that make up the U.S. labor force. The second part focuses on the demographic composition of unemployment. That discussion suggests reasons why age structure changes may be related to changes in the unemployment rates of demographic groups and to the aggregate unemployment rate. The third part describes forecasts of labor market variables provided by a long term econometric model that has been

Table 1

Age-Sex Composition of the United States Labor Force

(Percent of Labor Force Falling in Each of Six Age-Sex Groups, Selected Years)

	Male				Female							
Year	14-24	25-54	55 and over	Total Male	14-24	25-54	55 and over	Total Female	14-24	25-54	55 and over	Total
1950	12.6	45.6	12.9	71.1	6.9	18.2	3.8	28.9	19.5	63.8	16.7	100.0
1960	11.5	44.2	12.1	67.8	6.5	20.4	5.4	32.3	18.0	64.6	17.5	100.0
1970	13.7	38.7	10.8	63.2	9.5	21.2	6.1	36.8	23.2	59.9	16.9	100.0
1980	13.9	37.1	9.1	60.2	10.8	22.8	6.2	39.8	24.7	59.9	15.3	100.0
1990	10.1	39.6	7.4	57.1	8.8	27.8	6.3	42.9	18.9	67.4	13.7	100.0
2000 (I)*	8.3	38.1	6.9	53.3	8.1	31.5	7.1	46.7	16.4	69.6	14.0	100.0
2000 (II)*	9.4	37.1	6.7	53.2	9.2	30.6	6.9	46.8	18.6	67.7	13.6	100.0
2000 (III)*	10.7	35.9	6.4	53.0	10.5	29.7	6.8	47.0	21.2	65.6	13.2	100.0

Sources: Actual data are from Employment and Training Report of the President, 1977. Projections were done by the author, based on Census Bureau population projections published in Current Population Reports, P-25, No. 704.

*Roman numeral in parentheses indicates Census Bureau population projection series. The series differ in assumption of ultimate completed cohort fertility: Series I-2.7, Series II-2.1, Series III-1.7. The projections for 1980 and 1990 are based on Series III.

developed to investigate the effects of demographic change on the labor market.

THE SUBSTITUTABILITY AMONG DIFFERENT AGE GROUPS IN THE LABOR FORCE

Economists sometimes find useful a highly simplified description of the production process that maintains that "labor" is combined with "capital" and "raw materials" inputs to produce the goods and services that the economy uses. This description gives no notice to the fact that "labor" is not a homogeneous, undifferentiated input, but rather consists of people with a great variety of characteristics, among which is age. The fact that workers are of different ages is not significant if age is not an important distinguishing economic characteristic--that is, if a worker's age did not determine in some important way the role he played in production. If workers of different ages could easily be substituted for each other in the production process, then change in the age structure of the labor force--change in the size of one age group relative to another--would not influence relative wages. For example, an increase in the number of young workers relative to the number of older workers in the labor force would simply mean that more youth would be hired relative to the number of older workers hired, and this change in employment proportions would not require a change in the wages paid to youth relative to the wages paid to older workers to make employers willing to hire a greater proportion of youth.

An issue of interest to economists contemplating prospective demographic change in the United States is the effect of age structure changes on aggregate output and the wages and incomes of different age groups. Such effects would depend in part upon the ease with which one labor force age group can be substituted for another in production when the relative sizes of age groups change.

Information about substitutability among age groups is of relevance to several current policy issues. The minimum wage laws are purported to have a disproportionate impact on the wages and employment opportunities of youth, whose lower levels of skills and experience qualify them for lower average wages than older workers. The nature of the impact of a wage floor on employment of young workers, and on their wages and incomes, depends on substitutability of older workers and of capital for young workers. The recently legislated increase in the mandatory retirement age may prompt an increase in the labor force participation of older workers. Changes in the age at which workers qualify for social security and other retirement benefits, and proposed changes in the adjustment of those benefits for early and for delayed retirement may affect labor force participation of older workers. Changes in the social security retirement earnings test passed by the Congress in December, 1977, may increase labor force participation of older workers. If these recent changes prompt a significant influx of older workers into the labor force, the impact on the wages, incomes and employment prospects of other workers could be considerable. That impact will depend on the substitutability of older workers for other factors of production.

Using data on the input and compensation of labor in the United States private sector during the years 1947-1976, I investigated the ease of substitution of age groups for one another in the labor force. My conclusion was that labor force age groups are not perfect substitutes for each other. That is, for producers in the aggregate to be willing to hire more young workers relative to older workers, the average wages of young workers must fall.

We know that labor can substitute to some degree for capital equipment in the production process. That is, employers can often use more labor and less machinery to produce a given quantity of output, if it appears more efficient to do so. However, the evidence indicates that different age groups of workers do not substitute equally well for capital equipment in production. It appears, in fact, that capital can more easily replace older workers than younger workers.

The ease of substitution in production among workers of different ages and capital will influence the way in which producers change the quantities of different age workers and of capital that they desire to hire in response to changes in their relative wages. If the wage of a particular age group of labor increases, and employers find it easy to substitute other age groups or capital for that group, the quantity of labor of the higher priced age group that employers want to hire will fall. Quantitative estimates of the ease of substitution among different age groups and capital can be used to calculate rough estimates of the effects of changes in the price of one input on the quantities of other inputs that producers in the aggregate might wish to hire, or "demand," as economists say.

These estimates can be used to suggest some of the partial effects on the labor market of various public policies. For example, my tentative estimates suggest that any measure (such as an investment tax credit or accelerated depreciation) that reduces the price of capital services relative to all other prices by, say, ten percent, will tend, other things equal, to increase the demand for capital by about four and one half percent and reduce the demand for workers age 14-24 by about two percent, for workers age 25-54 by perhaps three percent and for workers age 55 and over by about six percent. These estimates measure only partial effects of relative price changes. They reflect only substitution possibilities among different combinations of labor force age groups and capital that could be used to produce a given quantity of output. These estimates do not take into account additional investment that might be undertaken in order to produce additional output. The resulting growth in the economy then might increase the demand for labor of various age groups.

As a second example let us consider some possible effects of raising the minimum wage. If a rise in the minimum wage raises wages of all workers age 14-24 by ten percent, relative to other wages and prices, my estimates suggest that, other things equal, the quantity of labor of that age group demanded by employers may fall as much as twenty-five percent, demand for workers age 25-54 might increase by two to three percent, demand for workers age 55 and over might rise by about three percent, and demand for capital services would probably not be affected significantly. These effects reflect the substitution of capital and older workers, whose higher wages were not changed by the increase in the minimum wage, for younger workers whose wages were raised.

The above discussion provides some examples of how information about substitution possibilities among labor force age groups can be used to provide predictions of the effects of given price changes on quantities demanded of labor inputs. Similar measurements of substitution possibilities also can be used to provide information about how given changes in quantities will effect prices.

Obviously, the number of workers of various ages that are employed at any given time is determined primarily by the age composition of the population and the labor force, i.e., by the number of individuals of different ages seeking work. The age composition of the population will be determined by past demographic history, not by current economic conditions. Economic conditions, i.e., relative wages, will mainly adjust to the given demographic structure of the labor force, rather than the other way around. Measurements of the ease or difficulty of substituting one age group input for another provide information about how given changes in the size of the labor force age groups due to demographic changes will affect their relative prices. A rough idea is provided by the following estimates. If everything else in the economy could be held constant, a ten percent increase in the labor input of workers age 14-24 would tend to reduce their wages by one to three percent. A ten percent increase in the quantity of labor of ages 25-54 would tend to reduce their wages by about five percent. A similar increase in the labor input of workers age 55 and older would tend to reduce their wages by about three percent.

A change in the quantity of one input also effects wages of other inputs. An increase in labor input increases the return to capital because the given stock of capital equipment then has more labor to work with, and hence each unit of capital can be used to produce more output. Workers of one age group can be used to substitute for workers of another, but only if there are changes in relative wages. All age groups do not substitute for a given group equally well. Therefore, an increase in the size of one age group will affect the wages of other groups, and the effects will differ across groups. For example, my preliminary estimates suggest that a ten percent increase in the quantity of labor provided by workers age 25 through 54 will tend to reduce the wages of workers age 14-24 by two percent. A similar proportional increase in the labor input from workers age 55 and over will tend to reduce the wages of young workers less than one percent. A ten percent increase in the quantity of labor provided by workers age 14-24 will increase the return to capital by less than one percent and will have a negative but negligible effect on the wages of older workers.

The estimates of the sizes of the effects of a change in the quantity of labor of one age group on the wages of other groups and the return to capital can be used to suggest the possible direction and magnitude of the aggregate effects of the recent increase in the mandatory retirement age. If raising the mandatory retirement age prompts an increase in hours worked by workers in the oldest age group of ten percent, that might serve to increase the return to capital by about one percent, reduce wages of young workers by less than one percent, but have a negligible effect on the wage rate of middle workers. These effects on relative wages of a hypothetical increase in the quantity of input of older workers do not appear to be particularly great. No evidence has yet appeared that the prohibition of mandatory retirement will prompt a large increase in the labor force of older workers. A survey of social security beneficiaries found that only seven percent of a cohort of retired male workers were retired unwillingly, able to work but unable to find a new job. The trend has been toward retirement at younger ages and nearly universal retirement at age 65. Labor force participation after age 65 will certainly be determined much more by Social Security legislation, economic factors and social conventions than by a mandatory age limit.

DEMOGRAPHIC CHANGES AND UNEMPLOYMENT

The rise in the average aggregate rate of unemployment over the past two decades has prompted widespread concern. It is frequently observed that because of the differences in rates of unemployment among demographic groups, the changing age-sex composition of the labor force would have raised the measured aggregate rate of unemployment even if group-specific rates remained constant. The increased proportion of the labor force accounted for by demographic groups which persistently have high rates of unemployment--younger workers and women--has increased the aggregate rate of unemployment, which can be calculated as an average of the rates of each group weighted by the proportion of the group in the total labor force. For example, the unemployment rate in the fourth quarter of 1977 was 6.6 percent, but that rate would have been 5.8 percent if the composition of the labor force were the same as it was in 1956, and each demographic group had its unemployment rate of the fourth quarter of 1977.

The entire change in the aggregate unemployment rate cannot be attributed to change in the composition of the labor force among demographic groups with differing but constant group-specific unemployment rates, however. The group rates have also changed. Examination of selected years indicates that for demographic groups that have increased relative to others the unemployment rates have increased. Table 2 compares the rate of unemployment of men and of women in three years of equal low unemployment and in two years of equal high unemployment. Over the period of observation, for equal aggregate rates of unemployment at both high and low levels, the rate for men has fallen and that of women has increased. During the period the share of the labor force made up of women has increased.

Table 3 presents, less precisely, the same general picture, comparing eight years between 1950 and 1974 when the unemployment rate varied in the relatively narrow range of 5.3 to 5.7 percent. In general the male unemployment rate fell over the period, as the participation rate and share of males in the labor force fell, while the female unemployment rate rose over the period, as the participation rate and share of females rose.

In Table 4 the high aggregate unemployment rate of 5.9 percent in the two years 1949 and 1971 is further disaggregated by age as well as sex. In general the rate rose for those groups which experienced the greatest growth over the period, teen-age men and young women. The exception was women age 45-64, whose unemployment rates fell while their labor force population grew rapidly.

Table 2

Unemployment Rates and Distribution by Sex in Years of Equal Aggregate Unemployment Rates

	Total		Male			Female		
Year	Number Unemployed (1000's)	Unemployment Rate (Percent)	Number Unemployed (1000's)	Unemployment Rate (Percent)	Participation Rate (Percent)	Number Unemployed (1000's)	Unemployment Rate (Percent)	Participation Rate (Percent)
Years of low unemployment:								
1948	2276	3.8	1559	3.6	87.0	717	4.1	32.7
1966	2875	3.8	1551	3.2	81.4	1324	4.8	40.3
1967	2975	3.8	1508	3.1	81.5	1468	5.2	41.2
Years of high unemployment:								
1949	3637	5.9	2572	5.9	86.9	1065	6.0	33.2
1971	4993	5.9	2776	5.3	80.0	2217	6.9	43.4

Table 3

Unemployment Rates and Distribution by Sex in Years of Similar Aggregate Unemployment Rates

	Total		Male			Female		
Year	Number Unemployed (1000's)	Unemployment Rate (Percent)	Number Unemployed (1000's)	Unemployment Rate (Percent)	Participation Rate (Percent)	Number Unemployed (1000's)	Unemployment Rate (Percent)	Participation Rate (Percent)
1950	3288	5.3	2239	5.1	86.8	1049	5.7	33.9
1954	3532	5.5	2344	5.3	86.4	1188	6.0	34.6
1959	3740	5.5	2420	5.3	84.5	1320	5.9	37.2
1960	3852	5.5	2486	5.4	84.0	1366	5.9	37.8
1962	3911	5.5	2423	5.2	82.8	1488	6.2	38.0
1963	4070	5.7	2472	5.2	82.2	1598	6.5	38.3
1972	4840	5.6	2635	4.9	79.7	2205	6.6	43.9
1974	5076	5.6	2668	4.8	79.4	2408	6.7	45.7

Table 4

Unemployment Rates of Age-Sex Groups in Two Years of Equal High Unemployment

			Age Groups								
	Year	Total	14-15	16-17	18-19	20-24	25-34	35-44	45-54	55-64	65+
Male	1949	5.9	5.2	13.7	14.6	10.4	5.2	4.3	4.3	5.4	5.1
	1971	5.3	12.8	18.6	15.0	10.3	4.4	3.1	3.0	3.3	3.4
Female	1949	6.0	7.4	14.4	11.2	7.3	5.9	4.7	4.0	4.4	3.8
	1971	6.9	10.2	18.7	16.2	9.6	7.0	5.2	4.0	3.3	3.6

This evidence suggests that changes in the demographic composition of the labor force have affected the aggregate rate of unemployment in two ways. First, change in the relative sizes of groups with persistently different unemployment rates has changed the weights attached to those rates in the determination of the average unemployment rate. Second, change in the relative sizes of demographic groups appears to have affected the group-specific unemployment rates themselves.

The evidence discussed above concerning the substitution possibilities among labor inputs in production suggests that an increase in the size of a demographic group will frequently prompt an increase in its rate of unemployment. That evidence indicated that different age groups are not perfect stustitutes in production, hence they should be treated as different inputs. A shift in the relative supply of workers of different demographic groups requires an adjustment in their relative wages. If wages are inflexible in the short run-- because of the prevalence of contracts or conventions about the "proper" structure of wage differentials--and particularly if changes in relative wages take place slowly, the process of adjustment may be prolonged. While relative wages are adjusting, excess supply will appear as an increase in demographic group rates of unemployment.

Any element that reduces wage flexibility, or that distorts the structure of equilibrium wages, will increase the rate of unemployment. One such element may be minimum wage legislation. When the floor under wages is raised, wage differentials are reduced. Needed adjustments in relative wages then require greater absolute increases than they would in the absence of the minimum wage.

I investigated the relationship between the relative size of a labor force demographic group and its rate of unemployment. For each of the three age groups mentioned above (ages 14-24, 25-54, 55 and over) and for each of 16 age-sex groups (eight age groups of each sex) I estimated statistically the relationship between the group rate of unemployment and its share of the labor force and the shares of other groups. For each group there was a significant positive relationship between its labor force share and the group unemployment rate.

A second experiment was performed to acquire information about the determinants of the unemployment rate of each of the sixteen sex-age groups. For each group I estimated the relationship between the annual average unemployment rate of the group and the labor force shares of each of the following four groups: males 14-24, females 14-24, females 25-44, and females 45 and over. These four particular demographic subaggregates were selected to serve as explanatory variables because their shares of the labor force have shown considerable variation over the period, and because there has been speculation that there may have occurred some substitution of one or more of those subaggregates for other groups during the period. Such substitution tendencies would be reflected in a positive relationship between the substituting group's labor force share and the replaced group's unemployment rate.

Unemployment of teen-age (14-17) males was positively associated with the size of the labor force of males 14-24, as the imperfect substitution hypothesis predicts. Males 14-24 also appeared to substitute for females 16-24 and for females 45 and older. The share in the labor force of females 14-24 was positively associated with unemployment of males 18-34, indicating substitution. The two subaggregates of women 25 and older appeared significantly to have substituted for teenage (14-17) males. The shares of both females 25-44 and females 45 and older were positively associated with unemployment of females 45 and older. Females 45 and older appeared to have substituted for males of the same age groups and for all the female age groups except 14-15.

This evidence is only descriptive and is tentative. It is consistent with the hypothesis put forth above, and it suggests that the demographic structure of unemployment and the aggregate unemployment rate are related to the effects of changes in the demographic domposition of the labor force.

FORECASTS OF LABOR MARKET DEVELOPMENTS: 1977-2000

The research I have just described was undertaken for the purpose of developing an econometric model that provides annual forecasts of a considerable number of variables characterizing the United States labor market. The model was developed to investigate and forecast the effects of demographic change on the labor market and on the economy. The investigation of the substitutability among labor force age groups and capital provides information about how wages and the price of capital services respond to changes in input quantities that may result from demographic changes. The examination of the determinants of the unemployment rates of demographic groups provides information regarding what proportion of the labor force will be employed and how this proportion relates to demographic change. To complete a set of equations to predict labor input, equations explaining the labor force participation rate for each demographic group, average weeks worked per year and hours worked per week were estimated. Given projections of demographic data, the equations of the model are solved for each future year to provide forecasts of the variables characterizing the U.S. labor market. The complete set of equations facilitated prediction of labor force participation rates, size, total manhours worked annually and total labor compensation received by each of sixteen age-sex groups (males and females age 14-15, 16-17, 18-24, 25-34, 35-44, 45-54, 55-64, and 65 and over). I will report a few interesting aspects of forecasts based on recent Census Bureau population projections.

Labor force participation rates indicate the proportion of each demographic group that is in the labor force.

Table 5 shows labor force participation rates for 16 age-sex groups for selected years in the past and projections to year 2000. For males, no major changes in participation are forecast. For ages 14-24, a decline in participation is forecast. For ages 25-54, a slight decline will occur, but nothing significant. For ages 55 and over a continuation of the declining trend observed since the end of World War II is forecast, with only about 10 percent of the male population age 65 and over in the labor force by the end of the century.

For women, important changes in labor force participation are forecast to continue. For ages 14-24, participation will continue to rise, with male and female participation rates converging toward very similar patterns by the end of the century. For women age 25-54, a continuation of the very strong rising trend observed over the past two decades is forecast, with participation rates rising from around 55-58 percent in 1977 to about 70 percent for women age 25-44 and about 80 percent for women age 45-54. For these groups a convergence of male and female rates are also forecast, but rates for women remain below those of men. For women age 55-64, participation is forecast to rise from about 40 percent in 1977 to over 60 percent in 2000, converging toward that of men. The participation of women 65 and over remains below 10 percent.

These changes in participation combined with changes in the age structure that result from past demographic changes bring about considerable changes in the size of the labor

Table 5

Labor Force Participation Rates of Demographic Groups, Selected Years: 1950-2000

(Percent of Each Age-Sex Group in the Labor Force)

Male

Year	14-15	16-17	18-24	25-34	35-44	45-54	55-64	65 and over
1950	29	52	86	96	98	96	87	46
1960	22	47	84	98	98	96	87	33
1970	22	48	82	97	97	94	83	27
1977	21	49	81	96	96	92	74	20
1980	21	49	81	95	96	92	74	19
1990	19	56	76	94	95	91	72	14
2000	19	56	72	94	94	88	70	10

Female

Year	14-15	16-17	18-24	25-34	35-44	45-54	55-64	65 and over
1950	13	30	48	34	39	38	27	10
1960	13	29	48	36	44	50	37	11
1970	16	35	57	45	51	54	43	10
1977	17	41	63	58	58	55	41	8
1980	17	44	63	59	59	57	44	8
1990	19	55	66	61	63	68	58	8
2000	22	56	70	70	71	80	67	8

Sources: Actual data are from Employment and Training Report of the President 1977. Projections were done by the author.

force of different demographic groups. The size of the various demographic groups in the labor force in selected past years and forecasts to the year 2000 are reported in Table 6. For men age 14-24, because of the slight decline in participation and the stabilization in the size of the population of that group, there will be a decline in the labor force, from about 15 million in 1977 to about 13 million in the year 2000. This labor force projection assumes that the U.S. total fertility rate will return to 2.1 and remain there. If the total fertility rate remains as low as it is now, the size of this age group will decrease considerably. If it rises above 2.1, it will expand.

For men age 25-54 a sharp increase is forecast, from 37 million to 51 million, 38 percent. The size of the group age 55 and over will change very little. It was about 9 million in 1977 and will be about the same at the end of the century.

For women, the same pattern of rapid growth in the middle age group prevails, but because of the forecast increases in participation at virtually all ages there is some growth in all age groups. For women age 14-24 the labor force is forecast to grow from about 11 million in 1977 to about 13 million at the end of the century. For women age 25-54 the growth is dramatic: from about 23 million in 1977 to about 42 million in the year 2000, 84 percent. For ages 55 and older about 5 million were in the labor force in 1977; about 9 million is forecast for the

Table 6

Size of the United States Labor Force by Age-Sex Group, Selected Years: 1950-2000

(millions)

Male

Year	14-15	16-17	18-24	25-34	35-44	45-54	55-64	65 and over
1950	.6	1.1	7.0	11.0	10.0	8.2	5.8	2.5
1960	.6	1.3	6.9	10.9	11.4	9.6	6.4	2.3
1970	.9	1.8	9.9	12.0	10.8	10.5	7.1	2.1
1977	.9	2.1	11.7	15.7	10.8	10.4	6.8	1.8
1980	.8	2.0	11.9	17.1	12.0	10.2	7.7	1.8
1990	.7	1.8	9.7	19.3	17.0	11.1	7.3	1.6
2000	.8	2.4	9.6	16.1	19.1	15.3	7.9	1.2

Female

Year	14-15	16-17	18-24	25-34	35-44	45-54	55-64	65 and over
1950	.3	.6	3.8	4.1	4.2	3.3	1.8	.6
1960	.3	.8	3.8	4.1	5.3	5.3	3.0	.9
1970	.6	1.3	6.8	5.7	6.0	6.5	4.2	1.1
1977	.7	1.7	8.8	9.2	6.6	6.7	4.3	1.1
1980	.6	1.7	9.3	9.6	7.4	7.1	5.2	1.3
1990	.6	1.7	8.3	12.7	11.7	8.8	6.2	1.4
2000	.9	2.5	9.2	12.2	15.0	14.6	8.0	1.4

Source: Actual data from Employment and Training Report of the President 1977. Projections were done by the author, based on Census Bureau population projection Series II. (Ultimate fertility rate - 2.1.)

end of the century.

These changes in the size of various age groups are reflected in the shares of the labor force accounted for by various groups, as illustrated in Table 1. The most notable feature of Table 1 is that, while the share of the labor force accounted for by males of the prime ages, 25-54, remains virtually unchanged at about 38 percent, the share accounted for by females age 25-54 increases from about 22 percent in 1977 to about 32 percent at the end of the century. That increase is accommodated primarily by a fall in the share of younger and of older males. With the increase in the numbers of women in the labor force there is a corresponding increase in the value and in the share of total income earned by women.

The very high unemployment rates that have characterized teenage workers since the early 1960's are forecast to ease somewhat in the 1980's and 1990's, as the relative size of this age group falls. Since the model assumes no change in the strucutre of the labor market, teenage-unemployment rates remain higher than those of older groups, reflecting the frictional unemployment associated with labor force entry and the frequent job changes of teenagers, and the lesser attachment of teenagers to the labor force. At the end of the century, as the larger birth cohorts projected for the 1980's enter the labor force, teenage unemployment rates begin to rise.

The market for the labor services of the small cohorts born in the 1930's remains relatively tight as they pass through successive age groups. This is particularly apparent for males. The trend unemployment rates are lowest for males age 35-44 in the 1970's and for males age 45-54 in the 1980's. The same pattern exists for females, but it is obscured by the changes in participation that alter the supply pattern that would have been generated by demographic factors alone. The unemployment rates of women ages 25-54 remain higher than for men of the same ages, as the shares of these women in the labor force continue to increase.

The fall in fertility since the early 1960's, and the slower rate of population growth projected for the remainder of the century result in a slowdown in the rate of growth of the labor force and of labor input. Total labor input (adjusted for quality change) is forecast to grow about 51 percent between 1977 and 2000. Capital services input, meanwhile, is forecast to increse by about 87 percent by the year 2000.

In summary, there will be a rise in the proportion of the labor force accounted for by the prime age groups, both men and women age 25-54, as the baby boom generation enters that age group, while the size of both younger and older age groups remains virtually unchanged. There will be a dramatic rise in the number and proportion of women in the labor force. With the fall in the rate of growth of the younger age groups, the rates of unemployment of the age groups should decline. No major labor shortages in any age group are expected, while some of the labor market adjustment problems that were associated with the rapid increase in the number of young people in the late 1960's and 1970's should be relieved.

ADDITIONAL PEOPLE IMPROVE THE STANDARD OF LIVING THROUGH KNOWLEDGE CREATION AND PRODUCTIVITY INCREASES

Julian L. Simon

INTRODUCTION

In the long run, population growth and additional people are not bad for the standard of living; that is an observed empirical fact. And there is also sound theoretical reason to go further and say that population growth and additional people are beneficial, and to a large extent, in the more-developed world of which the U.S. is the central element. (The conclusions are much the same for less-developed countries, but for different reasons; the more-developed countries are the subject of today's hearing, however.)

These assertions are quite at variance with the conventional wisdom, of course. The conventional wisdom derives from simple Malthusian reasoning in which capital dilution is the key element. The positive effect of additional people in increasing productivity by creating new knowledge is completely absent from the original Malthusian model. Yet all economists agree that the increase in productivity due to increased productive knowledge is the most important fact about long-run economic growth in MDC's such as the U.S. Bringing into the model this effect of additional people on productivity through knowledge creation reconciles the theory with the observed facts about the relationship of population growth to economic growth. That is my subject today.

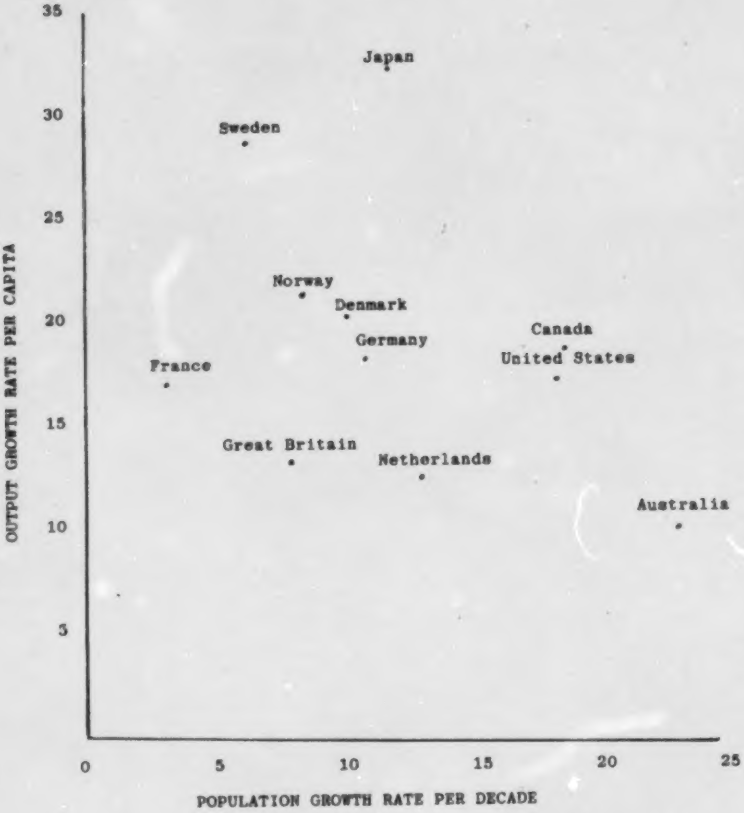
THE EMPIRICAL EVIDENCE CONTRADICTS THE CONVENTIONAL THEORY

Classical economic theory since the first edition of Malthus concludes that population growth must reduce the standard of living. The operative mechanism is "capital dilution." This concept, which is at the heart of all economic theory of population from Malthus to Limits to Growth, can be stated in a single sentence: The more people, the lower the per-capita income, all else equal. This proposition derives from the "law" of diminishing returns: Two men cannot use the same tool at the same time, or farm the same piece of land, without reducing the output per worker.

But—the empirical evidence does not confirm the conventional theory. The data suggest that in more-developed countries (MDC's) population growth does not hinder economic growth. One piece of historical evidence is the concurrent explosion in Europe of both population and economic development from 1650 onwards. The failure of France to excel economically despite its low birth rate in the past 100 years is an important vignette in this history. A fuller picture is given by the samples of countries in Tables 1 and 2, showing decadal rates of growth of population and output per capita for those contemporary MDC's for which long-run data are available. No strong relationship appears, as seen in Figure 1 and 2.

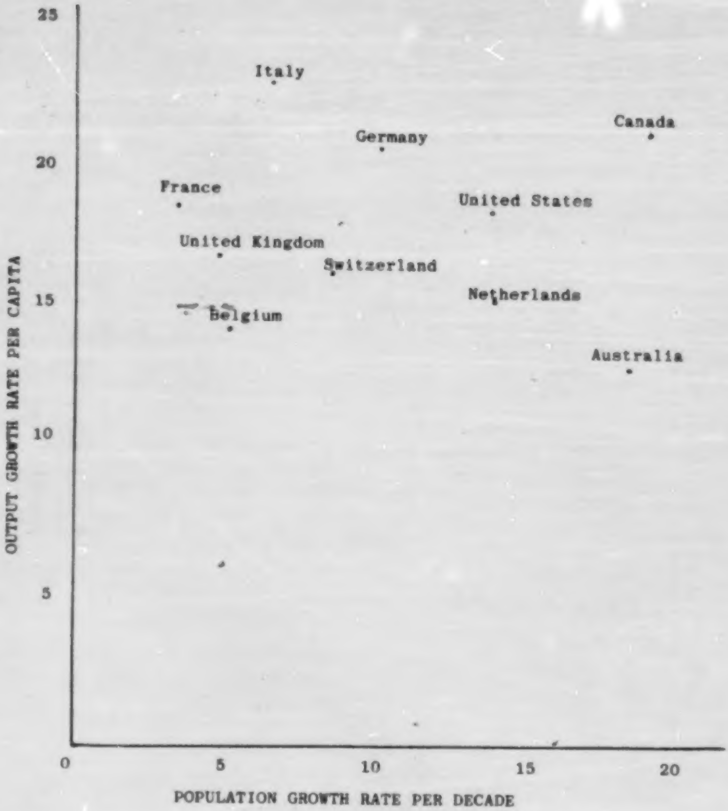
Tables 1 and 2, and Figures 1 and 2

Contemporary comparisons among various countries of current rates of population growth and economic growth are another source of evidence. Many such studies have been done by now. All except one (and that one has a fairly obvious flaw in its method) conclude that population growth



POPULATION GRWOTH AND OUTPUT GROWTH OVER A CENTURY IN CONTEMPORARY MORE-DEVELOPED COUNTRIES

Figure 1



POPULATION GROWTH AND OUTPUT GROWTH OVER HALF A CENTRUY IN CONTEMPORARY MORE-DEVELOPED COUNTRIES

Figure 2

Table 1. Population Growth and Output Growth Over a Century in Contemporary More-Developed Coutries

		Population Growth Rate per Decade	Output per Capita Growth Rate per Decade
France	1861-70 to 1963-66	3.0	17.0
Sweden	1861-69 to 1963-67	6.6	28.9
Great Britain	1855-64 to 1963-67	8.2	13.4
Norway	1865-69 to 1963-67	8.3	21.3
Denmark	1865-69 to 1963-67	10.2	20.2
Germany	1850-59 to 1963-67	10.8	18.3
Japan	1874-79 to 1963-67	12.1	32.3
Netherlands	1860-70 to 1963-67	13.4	12.6
U.S.	1859 to 1963-67	18.7	17.3
Canada	1870-74 to 1963-67	19.0	18.7
Australia	1861-69 to 1963-67	23.7	10.2

SOURCE: Kuznets, 1971, pp. 11-14.

Table 2. Population Growth and Output Growth Over Half a Century in Contemporary More-Developed Countries

		Population Growth Rate per Decade	Output per Capita Growth Rate per Decade
France	1896 to 1963-66	3.5	18.6
U.K.	1920-24 to 1963-67	4.8	16.9
Belgium	1900-04 to 1963-67	5.3	14.3
Italy	1890-99 to 1963-67	6.9	22.9
Switzerland	1910 to 1963-67	8.8	16.1
Germany	1910-13 to 1963-67	10.4	20.5
Netherlands	1900-09 to 1963-67	14.2	15.1
U.S.	1910-14 to 1963-67	14.2	18.4
Australia	1900-04 to 1963-67	18.8	13.1
Canada	1920-24 to 1963-67	19.4	20.9

SOURCE: Kuznets, 1971, pp. 11-14.

does not have a negative effect upon economic growth. Among these are studies by the best-respected economic-demographic statisticians of recent decades; for example, Kuznets' results are shown in Table 3. You may verify for yourself that neither a positive nor a negative relationship is shown by the data.

These overlapping empirical studies do not show that fast population growth in MDC's increases per capita income. But they certainly imply that one should not confidently assert that population growth decreases economic growth.

Table 3

THE EXPLANATION: ADDITIONAL PEOPLE PRODUCE ADDITIONAL PRODUCTIVE KNOWLEDGE

These empirical data, which conflict so sharply with the received theory, have naturally provoked explanations such as the advantages of youthfulness in the labor force, the increased opportunities and consequent flexibility in a growing economy, and the greater mobility of the labor force in a growing economy. But the most plausible explanation of the lack of negative influence of population growth almost surely is the positive effect of additional people on productivity by creating additional productive knowledge.

I am saying that, in the long run, the most important economic impact of population size and growth is the effect of additional people upon the stock of useful knowledge employed in the production of goods and services. And this positive effect is large enough (in the long run) to dominate all the negative effects of population growth. This

Table 3. Annual Rates of Growth of Population and Total and Per Capita Produce, Non-Communist Developed Countries (including Japan), Post-World War II Period (Mostly From the Early 1950's to 1964)

Average rates for groups of countries arrayed in increasing order of rates of growth of population (%)			
Groups	Population (1)	Per Capita Product (2)	Total Product (3)
1. 1-4	0.29	3.66	3.96
2. 5-8	0.65	3.60	4.28
3. 9-13	0.94	5.07	6.05
4. 14-17	1.46	3.49	5.00
5. 18-21	2.19	2.02	4.25
Average, 21 countries	1.10	3.64	4.77

SOURCE: Reproduced from Kuznets, 1967, p. 191.

is a strong statement, but the evidence for it seems strong. I shall now support this assertion, drawing on the detailed presentation of the evidence given in chapters 4 and 6 of my book, The Economics of Population Growth, attached here as Appendices B and C.

Let's begin with a question: Why is the standard of living so much higher in the U.S. or Sweden than in India or Mali? And why is the standard of living so much higher in the U.S. or Sweden now than it was two hundred years ago? The proximate cause is that the average worker in the U.S. or Sweden now produces x times as much goods and services per day as does the average worker in India or Mali, or as did the average worker in the U.S. or Sweden two hundred years ago, where x is the ratio of the standard of living now in the U.S. or Sweden, to that in India or Mali now or the U.S. or Sweden then.

Though the first answer is almost definitional it points us to the important next question: Just why does the average worker in Sweden now produce so much more per day than does the average worker in Mali, or than did the average worker in Sweden two hundred years ago? Part of the answer is that the average worker in Sweden today has available to him or her a much larger supply of capital equipment to work with--more buildings, tools, and transportation equipment. But that is only a minor factor; as proof, notice how fast West Germany and Japan were able to regain a high standard of living even after much of their capital was destroyed in World War II.

The all-important difference between the U.S. or Sweden now, and those countries two hundred years ago or India now, is that there is a much greater stock of technological know-how available now, and people are educated to learn and use that knowledge. The knowledge and the schooling are intertwined; in India now, unlike the U.S. two hundred years ago, the knowledge is available in books in the library, but without the schooling the knowledge cannot be adapted to local needs and then put to work. The stock of industrial capital is also intertwined with the stock of knowledge and with education; the value of much of our stock of capital such as computers and jet airplanes consists largely of the new knowledge that is built into them. And without educated workers, these chunks of capital cannot be operated and hence would be worthless.

The importance of the technological knowledge factor has clearly emerged in two famous studies, ore by Solow and the other by Denison. Using different methods, they calculated the extent to which the growth of physical capital and the labor force could account for economic growth in the U.S. and Europe. Both found that even after capital and labor are allowed for, much of the economic growth cannot reasonably be explained by any factor other than an improvement in the level of technological practice (including improved organizational methods). Economies of scale due to larger factory size do not appear to be very important in this context, though in larger and faster-growing industries the level of technology improves more rapidly than in smaller and slower-growing economies. This improvement in productivity with technological practice did not come for free, of course; much of it was "bought" with investments in research-and-development (R&D). But that does not alter the importance to us of the gains in technological knowledge.

How do population size and growth come into the picture? The source of improvements in productivity is the human mind, and the human mind is seldom found apart from the human body. And because improvements--their invention and their adoption--come from people, it seems reasonable to assume that the amount of improvement depends on the number of people available to use their minds.

This is an old idea, going back at least as far as William Petty in 1682:

> "As for the Arts of Delight and Ornament, they are best promoted by the greatest number of emulators. And it is more likely that one ingenious curious man may rather be found among 4 million than 400 persons . . .And for the propagation and improvement of useful learning, the same may be said concerning it as above-said concerning . . . the Arts of Delight and Ornaments. . . "

More recently, this effect of population size has been urged upon us by Kuznets.

It cannot be emphasized too strongly that "technological advance" does not mean "science", and scientific geniuses are just one part of the knowledge process. Much of technological advance comes from people who are neither well-educated nor well-paid--the dispatcher who develops a slightly better way of deploying taxis in his ten-taxi fleet, the shipper who discovers that garbage cans make excellent cheap containers for many items, the supermarket manager who finds a way to display more merchandise in a given space, the supermarket clerk who finds a quicker way to stamp the prices on cans, the market researcher in the supermarket chain who experiments and finds more efficient and cheaper means of advertising the store's prices and sale items, and so on.

Even in science one need not be a genius to make a valuable contribution, as Ortega y Gasset suggests:

> It is necessary to insist upon this extraordinary but undeniable fact: experimental science has progressed thanks in great part to the work of men astoundingly mediocre, and even less than mediocre. That is to say, modern science, the root and symbol of our actual civilization, finds a place for the intellectually commonplace man and allows him to work therein with success.

The need for additional producers of knowledge, and their potential contribution to resources and the economy, is manifest. Nobel winner Hans Bethe tells us that the future cost and availability of nuclear power--and hence the cost of availability of energy generally--would be a rosier prospect if the population of scientific workers were larger. Talking specifically about nuclear fusion and a device called Tokamak by the Russians:

> Work on machines of the Tokamak type is also going forward in many other laboratories in the U.S., in the U.S.S.R. and in several countries of western Europe. If the problem can be solved, it probably will be. Money is not the limiting factor: the annual support in the U.S. is well over $100 million, and it is increasing steadily. Progress is limited rather by the availability of highly trained workers, by the time required to build large machines and then by the time required to do significant experiments.

A casual inspection of the historical record confirms this speculation. There have been many more discoveries and a faster rate of growth of productivity in the past century, say, than in previous centuries, when there were fewer people alive. True, ten thousand years ago there wasn't much knowledge to build new ideas upon. But seen differently, it should have been all the easier ten thousand years ago than now to find important improvements because so much still lay undiscovered. Progress surely was agonizingly slow in pre-history, however; for example, whereas we develop new materials (metal and plastic) almost every day, it was centuries or thousands of years between the discovery and use of, say, copper and iron. It makes sense that if there had been a larger population then, the pace of increase in technological practice would have been faster.

For the U.S. in the twentieth century there is some statistical evidence. For the period 1950-1962 for the U.S., Denison estimated yearly growth in output of .76% due to "advances in knowledge" (which excludes the effect of education on the labor force), and .30% due to "economies of scale," for a total just over 1%. For Northwest Europe he estimated .76% due to "advances in knowledge," .56% due to "changes in the lag in application of knowledge, general efficiency, and errors and omissions," and .41% due to "economies of scale," for a total of something over 1.5% per year. Solow's estimate of the increase in output in the U.S. due to increases in technical knowledge for the 40 years from 1909 to 1949 is about 1.5% per year.

If a larger labor force causes a faster rate of productivity change, one would expect to see this reflected in observed changes in the rate of productivity advance over time in the United States as population has grown. And indeed, Solow concludes that the yearly rate of change of productivity went from 1% to 2% between the 1909-1929 and 1929-1949 periods; Fellner found these rates of productivity increase: 1900-29: 1.8%; 1929-48: 2.3%; 1948-66: 2.8%. These results are consistent with the assumption that the rate of increase of productivity is indeed higher when population is larger.

Is it certain that the faster recent productivity increase would not have occurred anyway, even if population had been smaller? The connections between numbers of scientists, inventors, ideas, adoption and use of new discoveries are difficult to delineate clearly. But the crucial links needed to confirm this effect seem very obvious and strong. For example, the data show clearly that the bigger the population of a country, the greater the number of scientists and the larger the amount of scientific knowledge produced; more specifically, scientific output is proportional to population size, in countries at the same level of income. The U.S. is much larger than Sweden, and it produces proportionately more scientific knowledge.

Then why aren't populous China and India the most advanced countries of all? Quite obviously, China and India do not produce as much new knowledge as the U.S. or the U.S.S.R. because China and India are relatively poor, and hence they are able to educate relatively fewer people. But it is instructive that India has perhaps the fourth biggest scientific community in the world--despite its poverty, and just because it has such a large population. Put differently, would you bet on Sweden or Holland. against Great Britain and the U.S.S.R., to produce such great discoveries as those that will make nuclear fusion practical? (I have omitted the U.S. from this discussion because of its higher per-capita income than Britain or the U.S.S.R.)

Though a bigger population produces more scientific knowledge, this does not yet show that more people mean a faster rate of technological advance, because science is not the same as applied knowledge put into operation. The fact that Sweden imports much more technology from the U.S. than the U.S. imports from Sweden is very suggestive. But one would like to have still more evidence.

The evidence on the rates of productivity gains in industries growing at different rates is indirect but it is nonetheless quite compelling, in my judgment. An industry, or the economy of an entire country, can grow because population is growing, or because per-capita income is growing, or both. Some industries in some countries grow faster than the same industry in other countries, or than other industries in the same country. Comparisons of faster-growing and slower-growing industries show that in the faster-growing industries, the rate of increase of productivity and technological practice is higher. This argues that faster population growth—which causes faster-growing industries—leads to faster growth of productivity. We shall see this in more detail in the next section.

Babies don't create knowledge and improve productivity while still in their cradles, of course. And though the family bears most of the cost, society must also shell out to bring the baby to productive adulthood. This means that if you do not look as far as the next twenty-five years, the knowledge benefits of someone else's baby born today do not interest you, and that baby is therefore a poor social investment for your taxes. But if you feel some interest and obligation to the longer-run future, perhaps based on the fact that you yourself are today enjoying the fruits of the expenses that someone paid for 25 or 50 or 100 years ago, then the knowledge produced by today's children will be seen by you to be of great positive benefit to you.

ECONOMIES OF SCALE

The phenomenon called by economists "economies of scale"—greater efficiency of larger-scale production where the market is larger—is inextricably intertwined with (a) knowledge creation and technological change, along with (b) the ability to use larger and more efficient machinery, and (c) greater division of labor. A larger population implies a bigger market, all else equal. A bigger market is likely to bring bigger manufacturing plants that may be more efficient than smaller ones, as well as longer production runs and hence lower set-up costs per unit of output. A larger market also makes possible greater division of labor and hence an increase in the skill with which goods and services are made . Specialization can also occur with respect to machinery. If the market for its goods is small, a firm will buy a machine that can be used in the production of several kinds of products. If the market is larger, the firm can afford to buy a separate, more-specialized machine for each operation. Larger markets also support a wider variety of services. If population is too small, there may be too few people to constitute a profitable market for a given product or service. In such a case there will be no seller, and people who do need the product or service will suffer from not being able to obtain it.

Economies of scale also stem from learning. The more television sets or bridges or airplanes that a group of people produces, the more chance they have to improve their skills with "learning by doing," a very important factor in increasing productivity. The increased efficiency of production within firms and industries as experience accumulates has been well documented in many industries starting with the air-frame industry in the 1930's. The bigger the population, the more of everything that is produced, which promotes learning by doing.

A bigger population also makes profitable many major social investments that would not otherwise be profitable, e.g., railroads, irrigation systems, and ports. The amount of such construction often depends upon the population density per given land area. For example, if an Australian farmer were to clear a piece of land very far from the nearest neighboring farm, he might have no way to ship his produce to market, as well as having difficulty in obtaining labor and supplies. But when more farms are established nearby, roads will be built which will link him with markets in which to buy and sell. Of course, there may also be diseconomies of increased scale, for example congestion and pollution.

The most relevant evidence on economies of scale comes from studies of industries as wholes. As mentioned above, it is an important and well-established phenomenon that industries which grow faster increase their efficiency faster--even compared with the same industries in other countries. The most recent and complete analysis is shown in Figure 3. There we see comparisons of the productivity of U.S. industries in 1950 and 1963, and of U.K. industries in 1963, against U.K. industries in 1950. The larger the industry relative to the 1950 U.K. base, the greater is the productivity difference. This effect is very large. It is also consistent with "Verdoorn's Law", which is, productivity goes up with the square root of output. That is, if you quadruple the size of an industry, you may expect to double the output per worker and per unit of capital employed.

Figure 3

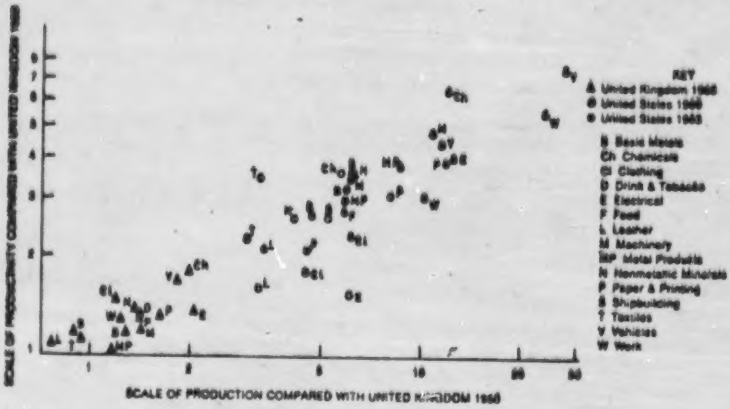


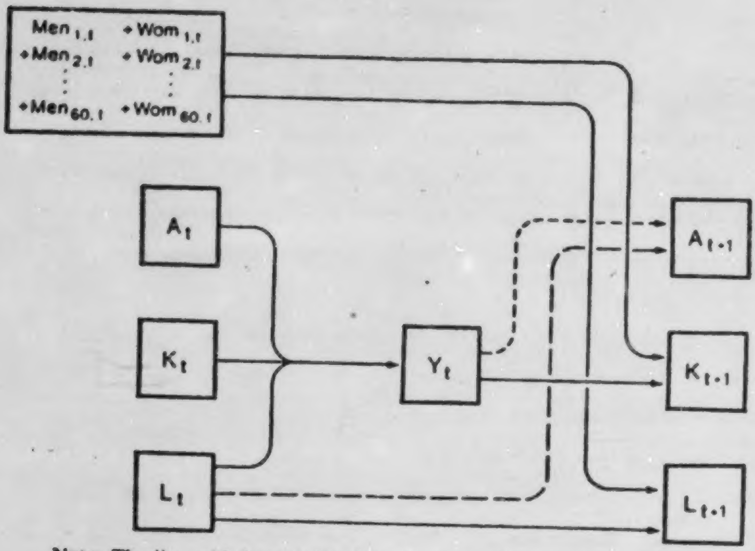
FIGURE 3 THE EFFECT OF SCALE UPON PRODUCTIVITY
Source: Reproduced from Clark, 1967, p. 265.

A RICHER COMPUTER MODEL

Population size and growth have a variety of economic effects, some negative and others positive. If the economist is to be worth his keep, he must take account of the size and importance of the various effects, and calculate the net effect. One can only obtain a satisfactory overall assessment by constructing an integrated model of the economy, and then comparing the incomes produced by the economy under various conditions of population growth.

If one adds to the simple, neo-classical model another fundamental fact of the economic growth of nations—the increase in productivity due to additional people's inventive and adaptive capacities—one arrives at a very different result than the standard Malthusian model. The analysis is outlined in Figure 4, where the elements of the usual economic demographic model for MDC's are shown in solid lines, and where the knowledge-feedback elements are shown in dotted lines. That is, this model embodies not only the standard classical and neo-classical capital effects, but also the effects of knowledge advance, economies of scale, and natural-resource use. These latter elements have been omitted from population models in the past, but they are crucial to a balanced understanding of the problem. The analysis is conducted separately with two separate ways of introducing the effect of population size upon the production of productive knowledge, the Residual model and the Verdoorn model.

Figure 4


Men 1,t
+Wom 1,t
+Men 2,t
+Wom 2,t
+Men 60,t
+Wom 60,t
A t
K t
L t
Y t
A t+1
K t+1
L t+1

Note: The line with long dashes from L_t to A_{t+1} represents the feedback effect in the Residual model, whereas the line with the short dashes from Y_t to A_{t+1} represents the feedback effect in the Verdoorn model.

FIGURE 4 SCHEMATIC OF MDC MODELS WITHOUT EDUCATION

The Residual model derives an estimate from the "residual" found in studies that attempt to explain U.S. economic growth. The residual is the unexplained portion of economic growth left after inputs of capital and labor have been accounted for, and is commonly associated with technological advance. And the Residual model asumes that the size of the residual is a function of the size of the labor force (considering the industrialized world as a whole, so that the question of a small country riding the coat-tails of other countries does not arise). In this formulation the residual is positively influenced by population growth.

Verdoorn's law provides a second approach to our subject. The Verdoorn model embodies the effect of the size of an economy--as measured by its labor force--upon the rate of increase in productivity. Additional workers certainly are not the only cause of increased outputs. But over any period longer than the business cycle, the size of the labor force is a major influence upon total output. And if one holds constant the capital endowment and the original level of technological practice in the analysis, then population size is the only influence upon total output. Therefore, it is reasonable to think of Verdoorn's law as a proxy for the labor force-productivity change relationship; that is, output itself does not change productivity, but rather the people engaged in producing that output change productivity (and in fact, Verdoorn explains his law as caused by learning). One may, of course, also think of Verdoorn's law simply as an empirical estimate of economies of scale without specifying a behavioral mechanism. Either interpretation is quite consistent with the work described here.

RESULTS: HIGHER POPULATION GROWTH IMPLIES FASTER ECONOMIC GROWTH

Five different rates of population growth were investigated in the simulation: ZPG has zero population growth; BASE has 1% population growth per year; PLUS-HALF has a 50% jump in the birth rate above BASE in year zero and subsequent years; TWO has 2% population growth per year; TEMP has a one-year temporary increase in the birth rate.

The results for the five demographic structures with the Residual model are shown in Figure 5; the corresponding results for the Verdoorn model are not shown but are similar.

Figure 5

The most important outcome is that under every set of conditions, demographic structures PLUS-HALF and TWO with the more rapid population growth come to have higher per-worker income than structure BASE in less than 80 years, even with a base rate-of-change technology as low as 1%. And in every run, structure TWO, which reaches a labor force (in thousands, say) of 23,769 in year t=160 from the starting point of 1,000 in year t=0, has a higher per-worker income structure than structure PLUS-HALF, which reaches a labor force of 7,346 in t=160. (For comparison, the labor force for structure BASE in year 160 is 4,913.) And population-growth structure ZPG holds its advantage over the BASE structure only about as long as BASE holds its advantage over faster population growth; thereafter, it does much worse.

In many runs the higher fertility structures overtake the BASE structure's per-worker output after only 30 years—that is, only about 10 years after the entrance of the first additional children into the

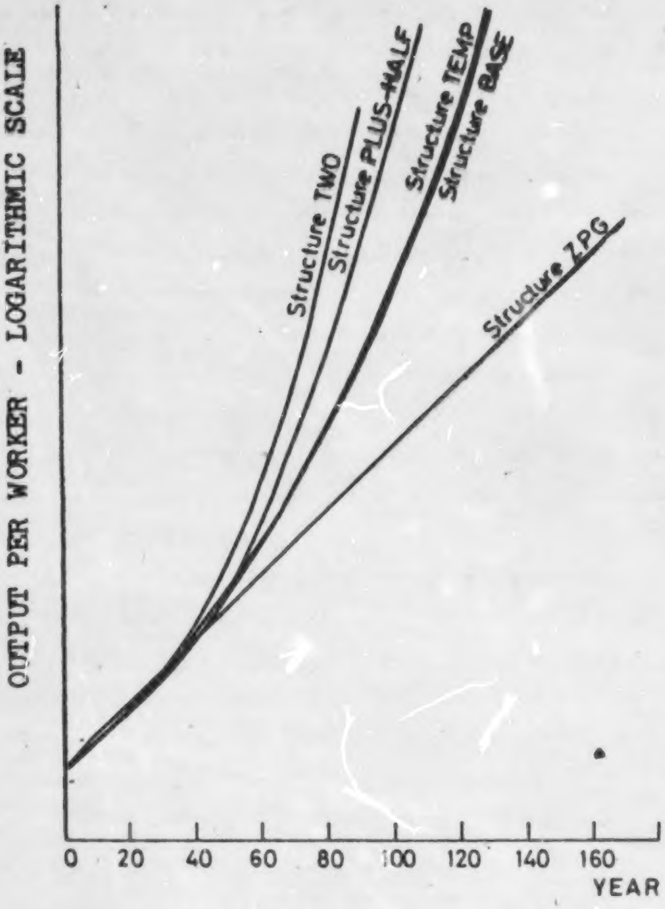


FIGURE 5 OUTPUT PER WORKER WITH VARIOUS RATES OF POPULATION GROWTH

labor force. It is true that the long run—30 to 80 years—is a long way off from now, and therefore is of less importance to us than is the short run. But we should remember that our long run will be someone else's short run, just as our short run was someone else's long run. Some measure of unselfishness should impel us to keep this in mind as we make our decisions about population policy. Furthermore, the short-run economic differences between the various demographic structures are small by any absolute measure, though the long run differences are large.

The time horizon is sufficiently short so that any possible major changes in the natural resources situation may be disregarded. But it is sufficiently long so that the delayed effects of knowledge increase can come to play their role. And though the models refer to the United States, it would be more appropriate to think of this analysis as applying to the developed world as a whole, because of the scientific and technological interdependence among the MDC's.

Models such as these would have had no chance of being accepted 15 or 30 years ago because of the pre-eminence of physical capital in the thinking of economists. But with the recognition in recent years of the fundamental importance of knowledge, education, and of the quality of the labor force in the productive process, these models and their results should fit well with our general understanding of the economic process in MDC's.

WHAT ABOUT OTHER FACTORS?

Often one hears the objection that even if additional people really will have a positive effect upon per-capita output and income, this positive effect would be offset by such negtive impacts as pollution of the environment, shortage of agricultural land due to paving it over for cities and highways, increased scarcity of energy and other natural resources, and increased chances of world starvation and famine. The main basis for this objection is the assertion that the trends in these factors are for the worse than at present. The simple truth, however, is that it is bunk that these trends are toward the worse; Appendix A gets a bit more specific, and offers some speculation about why people believe that the news about natural resources and the environment is bad when it is really good.

Another objection to my models is that they do not allow for the social disorder and psychological distress that would be caused by higher population density in the U.S. In fact, there is no evidence for any such negative effects of population density, as all recent studies have shown.

POLICY RECOMMENDATIONS

Based on the above analysis, my policy recommendations are simple:

1) Stop worrying about population growth in the U.S. Helping people obtain the number of children they want, no more and no less, is desirable on general grounds, but there is no long-run macro-economic warrant for any government population-control activities.

2) Increase the rate of immigration, because immigrants are likely to have even lower social costs, and higher social benefits of the sort described in this paper, than do native-born children. Of course, this recommendation requires another full argument, much of which was in my talk this year at the Population Association of America meetings.

SUMMARY

A larger population implies a larger amount of knowledge being created, all else being equal. This is the straightforward result of there being more people to have new ideas. The data on scientific productivity across countries bear out this obvious proposition.

A larger population also has a positive effect on the economic level through economies of scale. A larger population implies larger total demand for goods. And with larger demand and higher production come division of labor and specialization, larger plants, larger industries, faster learning-by-doing, and related economies of scale. Negative congestion effects do not seem to present an economic problem in this context.

These increases in productivity due to increased scale and to greater knowledge, caused by increases in population, were added to a simple classical model of a more-developed country, using two quite separate models. One model used the residual to estimate the feedback from the labor-force size to productivity; the second model used Verdoorn's law to estimate the feedback effect of total output on productivity.

Under a realistic range of assumptions about the parameters, demographic structures with larger rates of population growth, after initially falling behind in per-capita income, usually overtake structures with lower rates of population growth in 30-80 years, and the shorter end of this period is implied by recent rates of change of productivity. That is, though an increment of population initially has a small negative effect upon economic welfare, after some decades the effect becomes positive and large, compared to the short-run negative effect.

M/C/79

THE ONLY IMPENDING SHORTAGE IS A SHORTAGE OF BAD NEWS

Julian L. Simon

Newsweek, September 19, 1977: "[M]ore than 100,000 West Africans perished of hunger" in the Sahel between 1968 and 1973 due to drought. Writer Peter Gwynne informed me that the estimate came from Kurt Waldheim's message to the UN 1977 Desertification Conference. I therefore requested Waldheim's source.

Three documents came from UN Public Inquiries. (1) Waldheim's message, saying, "Who can forget the horror of millions of men, women and children starving, with more than 100,000 dying, because of an ecological calamity that turned grazing land and farms into bleak desert?" (2) Two pages by the UN Sahelian Office, dated 1974, that said, "[I]t is not possible to calculate the present and future impact of this tragedy, on the populations...Although precise figures are not available, indeed unobtainable... certainly there has been an extensive and tragic loss of life...". (3) Making nonsense of the other two documents was one page by Dr. Helen Ware, a respected Australian expert on African demography and a visiting fellow at the University of Ibadan in 1975 when the memo was written for the UN. Based on calculations of the normal area death rate and "the highest death rate in any group of nomads," she figured that "At an absolute, and most improbable, upper limit a hundred thousand people who would not otherwise have died, succumbed to the effects of famine...Even as a maximum [this estimate] represents an unreal limit."

To repeat, this statement, which flatly gives the lie to Waldheim's well-publicized assessment, was written for and sent out by the UN, well before Waldheim's message. Recently the UN press releases have retreated to the more modest - bu t still unprovable - assertion that "tens of thousands" died.

This is just one example of a common phenomenon: False bad news about population growth, natural resources, and the environment is published widely in the face of contradictory evidence. Another example from the same Newsweek piece: "More than one-third of all the land is desert or near-desert. And deserts are spreading inexorably, turning arable land into stony waste or heaps of drifting sand...annually destroying twelve million to seventeen million acres." The front-page headline of the New York Times said, "4 Million Acres a Year Vanishing as Deserts Spread Around Globe." The clear implication is that the world's supply of arable land is decreasing. But the truth is exactly the opposite: Joginder Kumar carefully surveyed arable land in 1950 and 1960. His finding: Nine percent more total arable land in 1960 than in 1950, in the 87 countries for which he could find data (73 percent of total world land area)—a gain of almost one percent per year. And the US Department of Agriculture reported that this trend continued after 1960.

Here are some other examples of publicized, false, bad news and the unpublicized, good-news truth:

Statement: The food situation in less-developed countries is worsening. Fact: Per capita food production has increased roughly one percent yearly--25 percent during the last quarter century. Food stocks are high now. Even in less developed countries food production has increased substantially, and India now has large amounts of food in storage.

Statement: The danger of famine is increasing. Fact: The leading expert on famines, Gale Johnson, estimates that since World War II there has been a "dramatic decline" in famines. Only a tenth as many people died of famine in the third quarter of the 20th century as in the last quarter of the 19th century--despite the much larger population now.

Statement: Higher population growth implies lower per capita economic growth. Fact: Empirical studies by Nobel-prize winner Simon Kuznets and others show no statistical correlation between countries' population growth and their per capita economic growth, either over the long run or in recent decades.

Statement: Sophisticated computer models show that for the next thirty years an increase in population causes a decrease in per capita income. Fact: At the heart of all these models is simply an arithmetical truth: When there is one more child sharing the same amount of goods, there is less to go around. That is, the instant a calf is born, per capita income and wealth go up; but the instant a child is born, per capita income and wealth go down. Once the children grow up and become producers as well as consumers, the impact on per capita income reverses and eventually the income of others is higher because of them, as my own technical work has shown. But this takes more than the 25 or 30 years covered by the well-known models.

Statement: Urban sprawl is paving over the United States, including much "prime agricultural land" and recreational areas. Fact: All urban land plus roadways totals less than 3 percent of the US. The USDA concluded that "...We are in no danger of running out of farmland." Wildlife areas, state and national parks rose from eight million acres in 1920 to 61 million acres in 1964, and still rising.

Statement: Energy is getting scarcer. Fact: The only meaningful measure of scarcity in peacetime is the cost of the good. The cost of energy--whether measured in labor time required to produce the energy, in production costs, in the proportion of our incomes spent for energy, or even the price relative to other consumer goods--has been falling rather steadily over the entire course of recorded history, right up until this moment.

Statement: The Nation's "overall environmental well-being" is declining, according to the Environmental Quality Index. Fact: This widely-reported "index" is "a subjective analysis...[which] represents collective thinking of the editors of the National Wildlife Federation Staff"—that is, casual observation.

The objective statistical facts, however, indicate that the environment is getting better. The official Council on Environmental Quality's statistics on major air pollutants show sharp improvements in the last decade. With respect to water, "major improvements in the quality of polluted streams have been documented" with hard data. The fish catch in Lake Erie, long ago said to be "dead" by Barry Commoner has been increasing. The most important indicator is life expectancy; it continues to rise.

Statement: Increased population density leads to psychological and social pathology. Fact: The statement is sheer myth, based on faulty analogies to animal behavior. Social surveys conclude that density has no general ill effects on such measures of welfare as longevity of life, crime rate, mental illness rates, and recreational facilities. The most ambitious experimental tests, by psychologist Jonathan Freedman who, as an associate of Paul Ehrlich, started out believing that density is pathological, found that "People who live under crowded conditions do not suffer from being crowded. Other things being equal, they are no worse off than other people...It took me and other psychologists working in this area many years to be convinced, but eventually the weight of the evidence overcame our doubts and preconceptions."

Why do false statements of bad news dominate public discussion of these topics? Here are several speculations: (1) There is a financial incentive--grants from the State Department and the UN--for scholars and research institutions to produce such statements. (2) Bad news sells books, newspapers and magazines; good news is not half so interesting. (3) It is in the self-interest of conservation organizations to convince people that population growth is a bad thing. In the short run more children mean more visitors to wildlife areas--though in the long run a larger population may well build and protect new and better recreation areas. (4) Beliefs about the value of human life are involved. For example, when referring to the 23 million population increase in the U.S. during the 1960's Kingsley Davis, one of the world's great demographers, said: "I have never been able to get anyone to tell me why we needed those 23 million". Or Paul Ehrlich: "I can't think of any reason for having more than one hundred and fifty million people [in the U.S.]." The human value of these lives to the people themselves and to others is not a value for such people as Davis and Ehrlich.

Don't shrug off false bad news as harmless exaggeration. The piper will be paid, in loss of credibility for real threats as they arise because of "wolf" cries, and in loss of public trust in debased public communication. As Philip Handler, President of the National Academy of Science, testified to Congressmen in the midst of the environmental panic in 1970: "The nations of the world may yet pay a dreadful price for the public bahavior of scientists who depart from...fact to indulge...in hyperhole."

The question, then, is: Who will tell us the good-and-true-news? How will it be published for people to learn?

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The Economics of Population Growth

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CHAPTER 4

Macro-Economic Influences of Population Growth on Income in Developed Economies

ECONOMIES OF SCALE IN PRODUCTION[1]

THE PREVIOUS chapter discussed the main micro-economic effects of population growth in MDC's. This chapter considers the main macro-economic effects—economies of scale, and changes in knowledge and technology.

General

Despite the fact that economies of scale are indissolubly linked with advances in knowledge, it may be useful to examine some of the evidence from studies that have attempted to isolate the effect of scale on efficiency.

Most economic inquiries regarding economies of scale have sought to learn the most efficient size of *firm* within industries, to determine whether larger firms are more efficient than smaller ones. The methods used have been various, and the results are hard to interpret. But in any case, the studies of firm efficiency are not germane to our purposes. To see why, consider an industry in which even a small country's market would be large enough to support at least one firm of the largest size found in big countries. This apparently implies that there are no economies to be gained in that industry by being a country with a larger population. But the existence of several firms of that size may lead to greater efficiency on the average than if there is only one firm, due to the interaction of the firms. These efficiencies may come from "external" effects such as improvements in techniques that all firms share, or they may come from the quickening effect of competition. In any case, the implication is that the appropriate unit of analysis is the efficiency of *countries as wholes*—or next best, the efficiency of the various industries within countries. We shall first review the evidence in industries, and then move on to countries as wholes.

Changes in Productivity in Industries over Time

One method is to relate the rates of change of productivity *over time* in various countries to their rates of change of labor input. The typical regression model is

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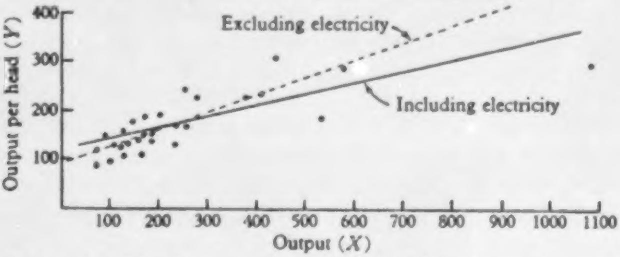
[1] General discussion of this topic may be found in Chapter 2. Discussion that pertains more to LDC's is found in Chapter 12.

$$\begin{pmatrix}\text{change of productivity in country } i \\ \text{during period } t\text{, in logarithms}\end{pmatrix} = a + b\begin{pmatrix}\text{change of total labor input in country } i \\ \text{during period } t\text{, in logarithms}\end{pmatrix}$$

This method was pioneered by Verdoorn, whose b coefficient was a remarkable .50 (Clark, 1967, p. 1960) which gave rise to Verdoorn's "law" that productivity goes up as the square root of total output. Clark used the same method on a larger sample and obtained a coefficient of 0.18, much lower than Verdoorn's estimate. Fabricant (1963, pp. 50–51) summarized the results of several cross-sections of time-series studies conducted by others. In a sample of somewhat less than 20 countries, over several decades the correlation between growth of physical output and output per man in individual industries is perhaps .7 or .8. When capital and other inputs are also included in the analysis, the correlation is somewhat lower, perhaps .6 or .5, according to Fabricant.

Movements of output and output per head, 1924–50 (1924 = 100)



Including electricity $Y_e = 113{\cdot}3 + 0{\cdot}23(X)$; standard error $= 35{\cdot}6$, $r = +0{\cdot}81$
Excluding electricity $Y_e = 94{\cdot}4 + 0{\cdot}34(X)$; standard error $= 31{\cdot}4$, $r = +0{\cdot}82$

FIGURE 4–1 OUTPUT AND OUTPUT PER HEAD IN VARIOUS INDUSTRIES IN ENGLAND, 1924–50

SOURCE: Reproduced from Salter, 1966, p. 123.

The most recent study in this tradition is that of Salter (1969), who worked with changes in output and productivity per worker over 1924–50 in 28 industries in Great Britain. The correlation between the change in output and the change in productivity (output per head) is 0.81 (1966, p. 110) as shown in Figure 4–1. The corresponding correlation for the 1954–63 period is 0.69 (1966, p. 202). And a similar analysis for the 1923–50 period for 27 industries in the United States yielded a correlation of 0.62 (1966, p. 166). The elasticity (calculated at the medians) for the 1924–50 sample is .26 if the electrical industry is included, .39 if it is not. For the 1954–63 period, the elasticity is .43.[2]

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[2] The medians and regressions come from Salter, 1966, pp. 107 and 123, 197 and 210, for the earlier and later periods respectively.

An important flaw of the time-series studies for the purpose here, however, is that there may well be causal effects in both directions between growth in market size (output) and growth in productivity. The time-series data show both effects together though we are presently interested only in the effect of growth in market size upon growth in productivity (the economies of scale). The resulting bias is upward. That is, the elasticity relevant to purposes here is likely to be lower than the estimates derived from, say, Salter's work.

Cross-National Productivity Comparisons

The tradition of work begun by Rostas (1948) has tried to remove the effect of technical change upon total output from the analysis by comparing two countries—usually the United States and Great Britain—at the same date. The model is:

$$\left(\frac{\text{Efficiency of U.S. industry } i \text{ in year } t}{\text{Efficiency of U.K. industry } i \text{ in year } t}\right) = f\left(\frac{\text{Scale of production of U.S. industry } i \text{ in year } t}{\text{Scale of production of U.K. industry } i \text{ in year } t}\right)$$

After omitting localized industries such as ice cream, Frankel (1957) obtained a correlation of .7 between relative efficiency and relative scale. Paige and Bombach (1959) used more industries than Frankel, and a different method, but obtained a similar rank correlation of .789 (p. 69).

Clark carried this work up to 1963, as shown in Figure 4–2. He finds that the slope of these data is "in the neighborhood of 0.5," which is quite consistent with Verdoorn's "Law."

Frankel (1957, pp. 64–68) developed other statistics that confirm the strong positive effect of market size upon productivity. When capital per worker and size of plant are held constant, the correlation between output per worker and market size goes up to .79. In a particularly telling analysis, he showed that the output per unit of *fuel input* is strongly positively affected by the market size—a correlation of .72 in the adjusted sample of U.S. and British industries. And when fuel input per worker and size of plant are held constant, the correlation rises to .90 (though Frankel warns of sampling instability). These fuel-input data are particularly interesting because they avoid problems of differences in skills of workers that might be present in the cross-country comparison. Fuel is the same in both countries, and if less fuel is needed per unit of output where markets are relatively larger, this would seem to show conclusively that relatively large markets result in relatively high productivity.

The rank correlation for output and productivity for 22 American and Canadian industries was .76 in 1955, implying that the size of the market "appears to be the most important single factor" accounting for differences between U.S. and Canadian productivity (Young, 1955, cited by Balassa, 1961).

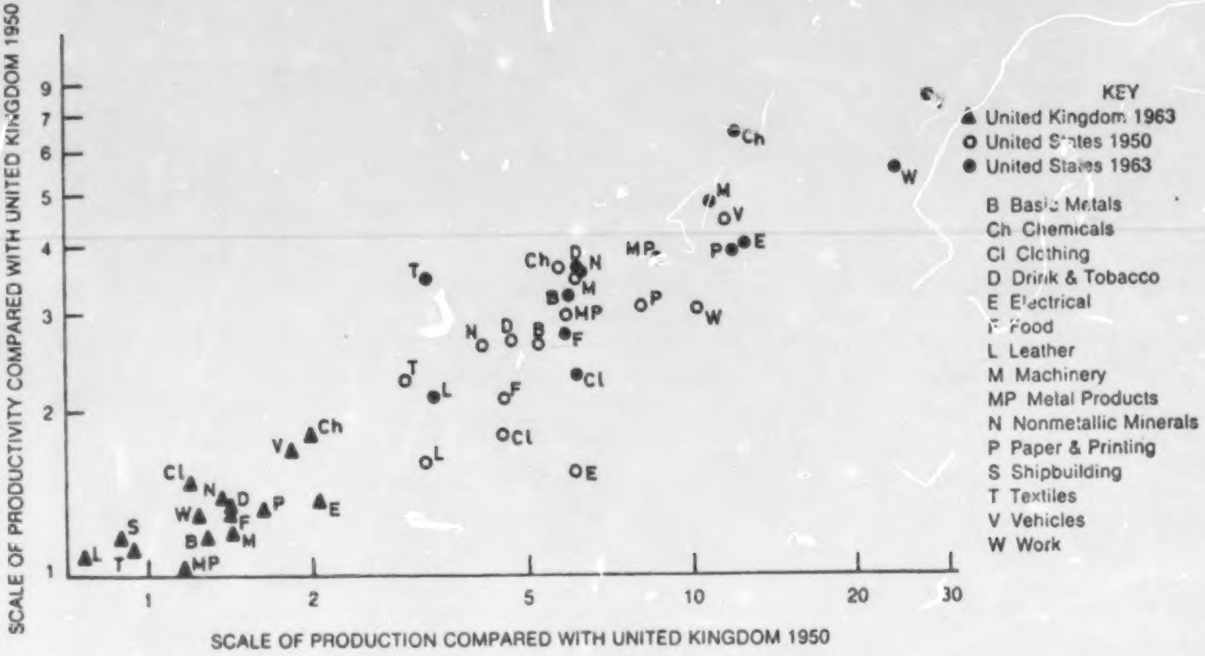

FIGURE 4–2 THE EFFECT OF SCALE UPON PRODUCTIVITY

SOURCE: Reproduced from Clark, 1967, p. 265.

Stigler (1961) used Frankel's data and a Cobb-Douglas function to estimate the elasticity of productivity with respect to output. The sum of the coefficients for capital and labor was 1.27, which implies an elasticity of .27, and substantial economies of scale. A regression using relative *prices* and relative outputs yielded a similar elasticity of .34. Fabricant (1963) warns us, however, that, in his judgment, any relationships drawn from these data are overstated for various technical reasons.

Chenery and Taylor (1968) conducted a time-series-plus-cross-section regression analysis of the development patterns of about fifty countries with 10–15 observations each. (Most of the countries are LDC's, but the pattern seems similar in both MDC's and LDC's.) For the manufacturing sectors that were expected to show economies of scale, the effects of reduced scale amount to between 25% and 50% in terms of "reduction in value"—very substantial indeed.

In summary, the evidence from cross-country studies suggests that economies of scale, at least in industry, are of the same order that Verdoorn found for within-country studies, that is, that productivity goes up as the square root of total output.

Economies of Scale in Governments

Now let us consider a single industry, the government. It is in the government sector that one would at first think there are substantial economies of scale, because of the one-to-a-country nature of parliaments, premiers, and so on. But upon examination of the matter across countries, E. Robinson concluded: "If one considers the problem as a whole, the economies of scale in relation to the administration, provision of public services, and the defence of a nation are probably on balance advantageous to a large nation, but, with the single exception of defence, are probably not of great significance." (1963, p. 239) And the largest nations seem to spend proportionally the most for defense, implying that even in the public sector economies of scale seem to be unimportant for our purposes.

Data on government units within countries would also seem to be relevant. Prest (1963) reports that in Australia, the Commonwealth Grants Commission studied the relationship of sizes of state to costs of education, health and hospitals, and law and order. The estimated cost per person was 12% lower in the three larger states (average 2.5 million people) than in the two smaller states (average 439,000 people), and it was 6% lower in the larger states than in South Australia (834,465 people). But these cost differences were said to stem not from differences in sparsity of population, but rather from total population size and differences in

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proportion of dependents; the latter factor muddies the point for purposes here.

With respect to hospitals alone:

> . . . the smaller the population the greater the need for excess capacity in hospital beds and other medical facilities in order to provide for random fluctuations in illness and injury. Despite the large population of the United States, the problem of efficient hospital size is still an important one. Nearly all observers are agreed that there are economics of scale in the production of short-term general hospital services up to a size of at least 200 beds (and possibly 500). However, at present almost 40 per cent of the short-term patient days in the United States are provided in hospitals with fewer than 200 beds.
>
> In general, the cost of producing medical care (adjusted for quality) goes down as population size increases. (Fuchs, 1971, p. 226).

A good many studies of the determinants of public expenditures in the United States have included variables for population density and for the population size of municipal units. Miner's excellent survey of the literature[3] (1963, pp. 43–48) reports that a wide variety of results have been found, depending on whether state or local expenditures are considered, which other variables are included, and so on. Miner concludes that "density is negative in its impact on state spending and positive in its effect on city spending. The higher costs of police and fire protection in the cities is offset in the state analysis by the negative influence of density on highway and school expenditures" (p. 47). All in all, there seems no on-balance evidence of economies (or diseconomies) of scale with respect to population density in the state-and-local-government sector.

Aggregate Economies of Scale in Production

The ultimate interest here is in scale economies for the economy as a whole. After carefully reviewing the sorts of materials discussed above, plus others, in the context of his study of inputs to production and growth in a sample of European countries and the United States, Denison (1967, pp. 298–301) estimated a yearly gain from economies of scale of .36% for the United States over the period 1950–62, and a yearly gain of .93% for Northwest Europe. In both places, growth of the national market accounted for most of the economies, and independent growth of local markets for only a small part. The greater economies of scale in Northwest Europe stem from the fact that the increase in consumption was (during 1950–62) composed relatively heavily of income-elastic consumer-durable goods.[4] It must be noted that Denison included in his economies-of-scale calculations only those economies from changes in *production* scale, and he excludes gains in knowledge; the latter are estimated separately.

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[3] I am grateful to Walter McMahon for bringing this reference to my attention

For the purposes of the present model, the economies of scale must be related to population changes. During the 1950–62 period, population grew annually at about 1% in Europe and at perhaps 1.5% in the United States; more relevant, the work forces grew by .9% and 1.1% (Denison, 1963, p. 52). But the scale change that produces economies of scale is the scale of the *economy*, much of which would have occurred even if the population were stationary. Therefore, we must calculate the economies of scale due just to the growth in population (labor force). This may be done by considering the proportion of the total growth in the economy due to increase in labor force. Denison estimated that increase in labor force accounted for 33% of the total observed increase in the scale of the United States economy, and 18% in Northwest Europe. These estimates imply an elasticity of perhaps .1 for the United States, and about .18 for Northwest Europe. That is, a rate of increase of 1% in population (labor force) would be expected to produce a continuing increase of .1% in production due to increases in efficiency in the United States, and about .18% in Northwest Europe.[5]

Thirlwall (1971, p. 16) estimated a similar elasticity with a cross-sectional regression of Denison's data in this form:

$$\begin{pmatrix}\text{Rate of change in}\\ \text{productivity}\end{pmatrix} = a + b\begin{pmatrix}\text{Rate of change of}\\ \text{labor force}\end{pmatrix}$$

He obtained the relatively high coefficient of .274, but it was not very significant statistically ($t = 1.2$); hence, not much weight should be given to his findings.

These magnitudes may seem small at first. But it should be remembered that the elasticity of advances in *knowledge* with respect to population is considerably higher than that of economies of scale, as we shall see in

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[4] This causes economies of scale to appear both because of the nature of the technology involved in the production of consumer durables, as well as because of their relative prices and the technical matter of their differential impact when prices are weighted in different countries' prices. For discussion of this complex matter, see Denison, p. 235 ff.

[5] The calculation is:

$$\frac{33\% \times .36\%}{1.1\%} = .1 \text{ for the United States}$$

and

$$\frac{18\% \times .93\%}{.9\%} = .18 \text{ for Northwest Europe}$$

the next section, because advances in knowledge—holding education constant—can be attributed entirely to the growth in people rather than to the growth of the economy as a whole. And the rate of growth of the former is much less than the rate of growth of the latter, implying higher elasticities, *ceteris paribus*.

Hagen (1953) studied the correlates of the incremental capital-output ratio. A lower ratio implies that an economy can obtain more output per unit of investment, which is an advantage. Hagen found that in eight MDC's, "the relationship between the rate of increase in the working force and ICOR [incremental capital-output ratio] is striking." That is, a faster-growing work force seems to cause investment to be more profitable, which is an economy of faster growth. Hagen offers this explanation: "A rapidly increasing labor force absolves a country from penalty for almost all mistakes in investment."[6]

Diseconomies Due to Congestion

Recently, economists have begun to speculate that increased population also causes important diseconomies of scale, especially from congestion. Each person is said to impose costs on other people by decreasing the space in which the other person can move around, and by each person depositing his waste (e.g., soot) on other people. Therefore, *ceteris paribus* the more other people there are, the less space each person has and the more pollution he suffers from. These effects would be expected to be felt both in decreased ease and joy of living, and in higher prices due to higher costs of production caused by congestion costs.

Economic evidence of such congestion effects is, however, not obvious or easy to come by. The only explicit study of the matter is that of Nordhaus and Tobin. Their method was to *assume* that the higher wages which people receive in larger cities, holding education and several other variables constant, is a measure of the disamenity of larger cities. By regressing median income on relevant variables, they estimate that 8% of national income may be considered to be the "value" of such urban disamenities, with an elasticity of .06 for income with respect to population size and density taken together (1972, pp. 50 and 54). But interpreting the income differential as a measure of urban disamenities seems unsound to me. The Nordhaus-Tobin regressions do not allow for differences in skill and talent over and above differences in education, exercised by people in similar occupations in different-size places. Common observation suggests that the best advertising copy-writers in New York and Chicago are much more skilled and talented than the best people in that job in small towns; the best ones in the small towns go to the big cities, which explains why some advertising men in New York and Chicago, but none in Champaign or Springfield, make $100,000 or $200,000 per year. Similarly, the best doctors tend to practice in bigger cities: this is why patients with difficult ailments are more likely to be sent there. It is also true of entertainers and of many other occupations that the level of skill is much higher in bigger places. And the fact that there are higher incomes in *some* occupations probably raises income levels in other service occupations because of the positive income elasticity of demand. This in turn is likely to affect wages in other occupations. This fact of higher skills and talents in many occupations in bigger cities, with its derivative effects, would seem to me to explain more of the income differentials by size of city than do the disamenities of larger places—though direct inquiry into the matter would seem very worthwhile.

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[6] On the other hand, Hagen finds some evidence (though scanty) that abundance of natural resources in the form of land makes investment more profitable. This implies that population *density* has a negative economic effect through efficiency in investment, whereas population *growth* has a positive effect, which is almost a contradiction. But the density effect is much weaker than the growth effect in Hagen's data. More work deserves to be done along this line.

If there really are important congestion costs in bigger cities, one would expect them to be reflected in the markets for goods, for example in the standard-of-living data for different size cities. Figure 4–3 plots Bureau of Labor Statistics (BLS) costs of living on a moderate budget in three of the nation's four main regions (the cost of living in the South is lowest across the board). No strong relationship between size of city and cost of living is apparent. And from a study of the BLS cost-of-living indices for four geographical regions Sheffer (1970) concludes that "the overall impression that one may obtain from the above analysis is that, by and large, no significant relationship exists between population size of SMSA [Standard Metropolitan Statistical Area], and the consumer expenditure necessary for a given standard of living." Alonzo and Fajans (1970) calculated that there is a "slight" positive association between city size and the BLS budgets. But they find that much of this association is due to the fact that the BLS budgets contain higher-quality items in bigger places, where incomes are higher. (Income rises considerably faster with city size than does the BLS cost of living.) This, in turn, is due to higher expenditure aspirations and expectations of people in larger cities. Alonso and Fajans conclude that "it is not more expensive to live in larger urban areas . . . The common belief that bigger places are more costly appears the result of higher expectations rather than higher prices" (p. 3). Haworth and Rasmussen (1973) found a positive relationship between city size and cost of living when they omitted per-capita income from the analysis: "'In the high budget . . . for each additional million additional popula-

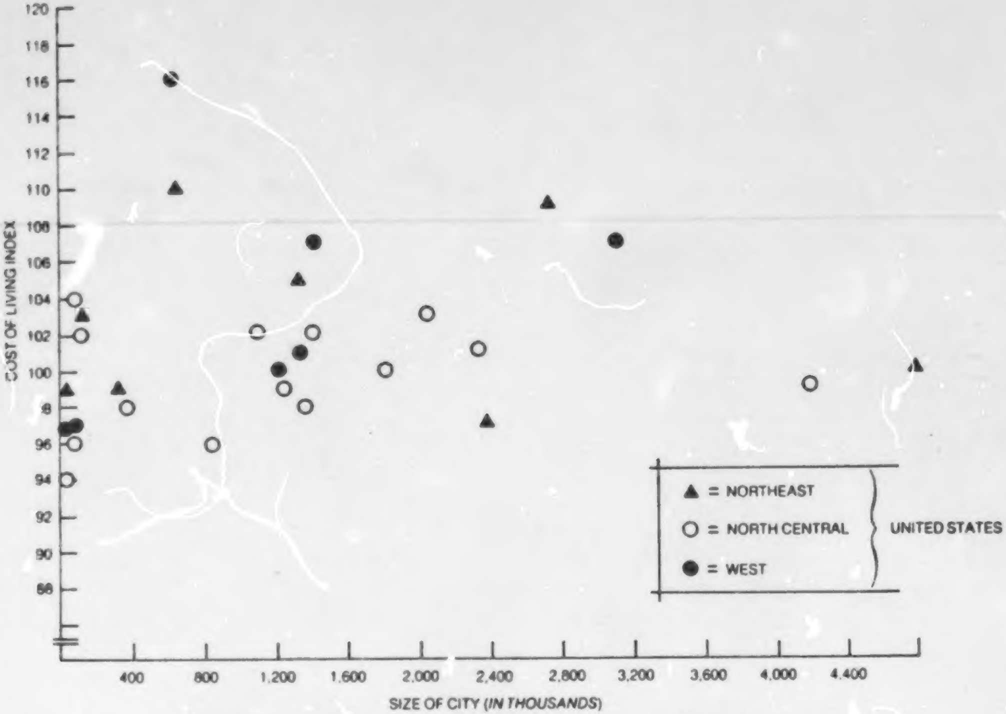

FIGURE 4–3 RELATIONSHIP OF CITY SIZE IN THE UNITED STATES TO COST OF LIVING, 1969

SOURCE: Bureau of Labor Statistics, *Handbook of Labor Statistics 1969*, Bulletin no. 1630, July 1969.

tion the cost of living goes up by . . . one per cent,' and less in moderate and low budgets (no effect in latter)." But the magnitude of their finding is so small in economic terms that it is equivalent to no effect.

Perhaps the most general and best test of whether an even denser population would increase or decrease people's individual welfare is by observing which levels of density people *choose*, taking together all the conditions of life in various places. That is, do more people move to the biggest cities or to smaller cities? (This test lumps together the welfare of people or workers and also of employers, because it includes the wages "paid by employers and their location choices.) There are several possible measurements that might be appropriate, but none seems to show that more people are choosing smaller cities in preference to larger ones (Bogue, 1953; Zitter, 1970; Berry, 1972)."[7]

All in all, there seems no strong evidence of diseconomies of scale in production even in the most densely settled areas of the MDC's. Rather, the evidence seems to point to significant economies of production scales, which will be handled as part of the overall impact of population size upon productivity in the MDC simulation model in Chapter 6.

ADVANCE IN KNOWLEDGE AS A FUNCTION OF POPULATION GROWTH

Technological Advance

An example to start with: a larger population makes it more possible for a country to raise enough taxes and manpower for huge knowledge-creating projects like areospace missions to the moon. Sweden's per-capita income is higher than that of the U.S.S.R., but if the latter were the size of the former it probably could not mount a moon shot.

It cannot be emphasized too strongly that "technological advance" does not mean "science," and scientific geniuses are just one part of the knowledge process. Much of technological advance comes from people who are neither well educated nor well paid—the dispatcher who develops a slightly better way of deploying the taxis in his ten-taxi fleet, the shipper who discovers that garbage cans make excellent cheap containers for many items, the supermarket manager who finds a way to display more merchandise in a given space, the supermarket clerk who finds a quicker way to stamp the prices on cans, the market researcher in the supermarket chain who experiments and finds more efficient and cheaper means of advertising the store's prices and sale items, and so on. Kuznets emphasizes the importance of this sort of technological advance (lectures in Jerusalem, 1970–71) and I agree. On this view, it makes straightforward sense that a larger labor force brings about faster technological advance in the MDC world, *ceteris paribus*.

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[7] Middle-size SMSA's *may* be growing at a faster *rate* than the biggest SMSA's. But even if this is indeed occurring, this would not necessarily indicate that middle-size SMSA's are more attractive—that is, attractive to more people—than bigger SMSA's, unlike the logic of Stigler's "survivorship" test in industrial organization.

As with economies of scale, technological advance cannot be cleanly separated from other elements of economic growth. But the attempts that have been made to isolate its effect are interesting nevertheless.

Let us begin with Denison's assessment:

> I have estimated that in the 1929–57 period the advance of knowledge, as distinguished from changes in the lag, contributed .58 percentage points to the measured growth rate of national product. This is equivalent to saying that the average level of knowledge relevant to measured production increased .58 per cent a year. . . .
>
> These increases are much smaller than the increases in the population of the United States, of advanced nations as a whole, or of the world. Maintenance of a constant rate of increase in knowledge therefore implies a declining per capita contribution to knowledge, whichever of the three population bases is used. In fact, it is highly unlikely that in the past the increase in the annual increment to knowledge relevant to measured production has even approached the population increase. It is perfectly obvious that it has fallen far short of the increase in scientists, engineers, or college or high-school graduates. If this were not so, the past growth rate of national product would have been sharply accelerating.
>
> This fact might mean that advances in knowledge are increasingly difficult to achieve as the level of knowledge advances, requiring a steady increase in inputs to maintain the same rate of advance. Alternatively, it can be interpreted to indicate that the pursuit of knowledge is subject to very sharply decreasing returns to scale; that the main determinant is the time required for one advance to lead to another, and that multiplying the number of individuals involved can by no means achieve a proportional contraction of the time span. The latter interpretation conforms to the conclusion reached by numerous observers of research projects, and particularly so with respect to the more basic or radical advances. (1962, p. 237.)

On the other hand, Kelley (1971) examined Higgs' (1971) data on inventions[8] from 1870 to 1920 and found that the elasticity of inventions with respect to population size was more than unity, even when urbanization is controlled. Kelley implies that it is unlikely that education or another variable accounts for the apparent relationship. And he finds some indication that the elasticity has declined somewhat over time. But please notice that an elasticity of unity for knowledge with respect to population growth is very high, and an elasticity of *much less* than unity is quite compatible with a rise in population having an over-all *positive* effect on per-worker income. (The over-all effect depends on the size of the negative effects from other sources—which alone must be far below unity, as we shall see—and on the extent of other positive effects.) But partial elasticities cannot be interpreted well. Only an examination of the complete system can give an answer to the effect of population growth on per-worker income. That is the aim of the simulation model described in Chapter 6.[9]

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[8] Although informal technological development by nonprofessional knowledge creators surely is of great importance, its quantity is hard to measure independently. It is for lack of such data that we turn to information on professional knowledge-creators.

Studies of the relationship of country size to scientific output indicate that, with per-capita income held constant, the quantity of scientific output is *proportional* to the size of the country (Price, 1972). That is, doubling the labor force implies doubling the rate of scientific output, *ceteris paribus*.[10,11]

[9] Implicit in the previous discussion is that the genetic potential for knowledge creation is, on the average, the same among people in larger and smaller populations. That is, it is assumed that a larger population is not larger just because the *least gifted* people are having more children; if in fact it were true that the difference in growth is made up only of those who will not contribute to knowledge, the total stock of potential knowledge-producers might be no higher with the larger population than with the smaller. But in the United States, most children are born to the middle class, and it is variations in the middle-class birth rate that have largely accounted for the post-World War II variations in the aggregate birth rate. Hence, the assumption about equal average genetic potential in various size populations seems reasonable in the United States context. Nevertheless, the possibility that the genetic intellectual potential might be relatively less on average with the bigger population is allowed for, at least to some extent, in the simulation models in the next chapter where education is a negative function of population growth rate.

[10] Of course, one cannot directly deduce from this evidence that if the number of people were doubled in the MDC world as a whole, scientific output would double. If there were no national or cultural or spatial barriers to knowledge, one would expect to find scientific output proportional to the labor force in each place *even if* additional labor force were highly redundant and produced much less than the proportional increment. But there are, in fact, important barriers to the free flow of knowledge and persons from place to place, as well as differences in the kind of scientific knowledge needed in various places. Hence, the scientific establishments in various countries are self-contained to at least some degree. And the fact that output is nevertheless proportional to labor-force inputs suggests that additional labor force might well contribute proportionally to output.

[11] The data presented in this chapter have shown that *exogenous* technological advance will be higher where there are more people. But technological advance may also be caused by the increased demand that stems from more people. Data seems to be nonexistent, and therefore this bit of history seems relevant:

The effect of population increase on the production and dissemination of agricultural knowledge is shown by Slicher van Bath (1963) over the sixteenth to nineteenth centuries. Before and after the hundred years from 1550 to 1650, population grew relatively rapidly, Some writers, even eminent ones, have questioned whether more people imply more ideas and technological development. But is there anyone who would bet on Sweden or Holland, against Great Britain and the U.S.S.R., producing the great discoveries that will make nuclear fusion practical? (I have omitted the United States because of its higher per-capita income.)

Quantity and Quality of Education

Another possible negative effect on knowledge due to population growth is a reduction in the amount of education children receive. Human capital as well as physical capital is crucial in the productivity of an economy. And people might not provide (or authorities might not demand) enough additional tax revenues to maintain the equivalent level of schooling. If so, the larger population, with its larger *proportion* of children, might lead to less education on the average, and less potential to advance knowledge *in total* than the smaller population.

The conventional theory of population growth's effect upon the amount of education per child is straightforward Malthus: A fixed educational budget of money and resources divided among more students implies less resources per student on the average. This theory also yields the quantitative prediction that the elasticity of the impact would be -1; that is, a 1% increase in children should cause about a 1% decrease in education per student.

But as we know from a host of evidence, people and institutions often respond to population growth by altering apparently fixed conditions. For example, in agriculture more children cause increased labor input by the parents (see Chapter 9). And when there are additional profitable opportunities for investment, economic theory tells us that people will shift some resources from consumption to investment; additional children constitute such an additional opportunity for profitable investment. Therefore, we must allow for possible responses contrary to the simple Malthusian pie-sharing theory.

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but it did not grow much from 1650 to 1750. "In the principal west European countries in the sixteenth century there was a flourishing literature on farming. . . . [But] there was no agricultural literature of importance between 1650 and 1750: what did come from the press was mostly reprints of older works" (1963, pp. 205 and 219). After 1750 there again developed a literature on agriculture, including scientific experimentation, by such men as Arthur Young and Von Thunen (p. 239). It seems reasonable to generalize this effect to modern MDC's, though it would be hard to demonstrate that an increase in population increases the *total* of knowledge rather than shifting attention to fields where population pressure is felt most acutely.

Also relevant is Shmookler's (1965) demonstration that industrial demand can have a major influence on the extent of invention in various industries.

There is no way of knowing from theory alone which of the two effects will dominate. Therefore we cannot know a priori whether the impact of population growth will approach the elasticity of unity that Malthusian theorizing suggests it will, or whether the elasticity will approach zero and complete offsetting the Malthusian effect by the induced-response effect; we must turn to empirical data.

A study across states of the determinants of United States expenditures on public education by McMahon (1970) yielded a coefficient for the effect of children aged 5–17 as a percent of the population that implies an elasticity[12] of .82 for expenditures with respect to the dependency rate; that is, if there is any negative effect of population growth on educational level, it is slight. The regression coefficients in a study by Miner (1963) imply *no* negative effect of the proportion of children under 18 on total expenditures per pupil.[13] After extensive survey of the literature, Miner concluded that his results are representative of and consistent with the literature. Those studies suggest that the best available estimate, given the present state of the art, is that the elasticity of educational expenditure with respect to the number of children is close to or equal to 1.0. Of course a nation-wide change in fertility may have different effects than do differences among states, but this cannot be judged from available data, because *local* expenditures per child are lower where the proportion of dependents is higher, state and federal funds making up the slack. This mechanism might not work to allow for the effect of higher state-wide or nation-wide dependency ratios that come with faster *nation-wide* population growth, but this is a matter for speculation.

On the other hand, Lindert (forthcoming, Chapter 7) plotted the course of educational expenditures from 1840 to 1972 in the United States. He finds a reduction in the upward trend (though still a continuation in growth) starting in 1950, about the same time that children began to be a rising share of the population after having been a declining share of the population in earlier years. Though this is hardly proof that fertility reduces educational expenditures per child, it is at least suggestive. Stronger negative evidence comes from Tolley and Olson (1971). In a

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[12] The estimate is based on a cross-section of U.S. states in 1958. The regression coefficient is .155, the mean of children/total population and the mean of (education/disposable personal income) in 1966 were, respectively, 25.5% and 4.8%. Time-series estimates for 1946–68 are also given by McMahon; they cover a wider range than the cross-section estimate, but they are less appropriate because of the likely downward bias in a short time-series when the effects are lagged (Aigner and Simon, 1970). I appreciate a useful conversa-with Walter McMahon about his article and the literature on the topic.

[13] This result is taken from Miner's regressions using all school systems in the sample (p. 98). The regressions using school systems *within* individual states show negative coefficients, but this clearly is because per-capita income—an important determinant of school expenditures—is not allowed for in the within-individual-state regressions, whereas it is allowed for in the all-school-systems regressions.

TABLE 4-1

THE EFFECT OF POPULATION INCREASE ON SCHOOLING IN MDC'S

Dependent variable	Regressions using crude birth rate		Regressions using dependency rate		Number of countries
	Elasticity from logarithmic regression	Elasticity from linear regression	Elasticity from logarithmic regression	Elasticity from linear regression	
Primary school attendance	−.01	−.007	−.07	−.07	19
Secondary school attendance	−.67[a]	−.57	−.82[b]	−.72	20
Tertiary school attendance	.28	.20	.82[a]	.67	20
Expenditures on schooling per child in dollars	−.45	−.32	−.26	.05	20

SOURCE: Pilarski and Simon, 1975.

NOTE: Elasticities and standardized regression coefficients for schooling as the dependent variable in regressions with either the crude birth rate or the dependency burden along with per-capita income, median education, life expectancy, and socialist-non-socialist as the independent variables in a sample of MDC countries.

[a] Significant at 10% level.

[b] Significant at 5% level.

careful simultaneous-equations estimation of educational expenditures and income across the states, they found that expenditures per pupil has an elasticity of −.47 with respect to pupils per employee.

A cross-section of MDC nations was examined by Pilarski and Simon (1975).[14] Regressions were run of the following form:

Percent attending specified level of schooling (e.g., primary) =
f (Birth rate or dependency rate; other variables);

and

Expenditures on schooling = f (Birth rate or dependency rate; other variables).

In Table 4–1 we see that both the crude birth rate and the fertility ratio have a substantial negative effect on expenditures per child and upon secondary enrollment, though not on primary or post-secondary enrollment. The effect on expenditures is nowhere near as great as simple Malthusian theory would suggest, however. More than half of the extra effort is made that would be necessary to keep expenditures per child at the same levels as if fertility were lower. And even the negative effect on expenditures that the data suggest is cast into question by the lack of statistical significance and by the fact that in a parallel linear regression the signs of fertility are positive rather than negative. But on balance, the data do suggest some negative effect of fertility on expenditures per child in MDC's.

In summary, the evidence in MDC's suggests that faster population growth has at least some negative effect on education per child, but the effect does not seem to be large.

Do Some Groups of Children Make a Negative Contribution?

Chapters 3–6 discuss children as if they are a homogeneous lot, making equal contributions to the society. The reader may wonder, however, whether some classes of children—particularly the poor—may be a drain upon the economy even if most children make a positive contribution. There seems to be no evidence for this view, however. The research of Jones and Smith, should be relevant even though it pertains to New Commonwealth immigrants into England rather than to new births.

> [Though] the income per head of members of New Commonwealth households is less than that of the indigenous population . . . the proportion of income saved—representing resources generated by the

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[14] I am grateful to Adam Pilarski for allowing me to use these results of our unpublished joint work.

> New Commonwealth labour force but made available for contributions to an increase in the capital stock – is higher than the average for the total population . . .
>
> They have tended to arrive at times when, and gone to places where, industrial capital has afforded jobs for which there were no indigenous takers. . . .
>
> Their demands per head on the social services are significantly below the national average. . . .
>
> Immigration did much to allow these aspirations for higher living standards to be realised. Certainly it seems improbable that, as some have feared, immigration has restrained indigenous living standards below the level which, in its absence, they might have attained. Among other evidence which points to this conclusion, special mention should be made of those sections of the study that indicate demands on the social services below those of the indigenous population, and an impact on the housing market which may well have helped, marginally, to raise the standards at which the indigenous population, on average, lives (1970, pp. 122, 123, 134, 161).

The data presented in this chapter should be qualified by the observation that they pertain to "Western" MDC's and Japan. They may not be relevant to "socialist" countries. As Kuznets says,

> Any relation between demographic trends and economic growth that might be derived from the experience of these non-controlled, non-authoritarian developed countries – that is the preponderant part of our known experience – may be invalid or irrelevant to a highly centralized system in which some groups of the population were subject to compulsory pressures and all population to fairly tight control in their roles in production and consumption. And, given the recent emergence of the U.S.S.R. type of social organization with its changing trends, our direct tested knowledge of its patterns of response, of relations within it between population trends and economic growth, are hardly adequate to permit us to dispense with analysis of wider and longer ranges of modern growth experience (1965, p. 24).

Other Demographic Variables

The discussion in this chapter, and the model constructed in Chapter 6, deal only with the impact of one demographic variable – total fertility – upon the MDC economy. But there are other demographic variables that could affect the standard of living, including the following: (1) The age at which women bear children can differ greatly. The length of time between generations of blacks in the United States is much less than that of whites, largely because blacks have children at younger ages. (2) The spacing between children can affect both the birth rate and the amount of time women are out of the labor force. (3) The year-to-year changes in mortality now taking place are not great. But there could occur in the future a significant lengthening of life. It would matter very much whether the lengthening takes place after the working years, or whether the working years are prolonged, also. (4) Choice of child's sex by parents could affect the sex composition of the work force, as well as subsequently influencing the birth rate. (5) Immigration and emigration affect the economy quite differently from fertility, both because migrants are largely of labor-force years and because they have different educational backgrounds than the rest of the labor force. (5) Though it does not show up in statistics concerning population growth, internal migration has a very large influence on the economy. Internal migration almost always represents an improved allocation of productive resources, as noted above.

Some day a model may be developed which will be able to account for these other demographic variables in addition to fertility.

SUMMARY (CHAPTERS 3 AND 4)

The history of the more-developed countries since the Industrial Revolution does not support the simple Malthusian model. A negative relationship between population growth and economic growth is not seen in anecdotal history or in time-series over the past hundred years or in contemporary cross-sections. Data shown in Chapter 3 suggest that there is no simple relationship between population growth and economic growth.

Various explanations of this discrepancy have been offered. The most general and most appealing explanation scientifically is the nexus of economies of scale, creation and adaptation of additional new knowledge by additional people, and the creation of new resources from new knowledge. Therefore the model constructed in Chapter 6 builds on this fundamental element of economic progress which has previously been left out of population models.

Chapter 3 next reviews the data on the key micro-economic variables to be entered into the MDC model. These include the effect of children upon saving (rather indeterminate) and the effect of additional children on the amount of labor-force work done by the mother and father (of less importance than usually supposed). Then Chapter 4 discusses the main macro-economic positive effects of population growth—economies of scale (substantial), and the evidence on the effect of population size and growth upon advances in knowledge (difficult but not impossible to quantify).

CHAPTER 6

The Effect of Population on Per-Worker Income in MDC's: A Simulation

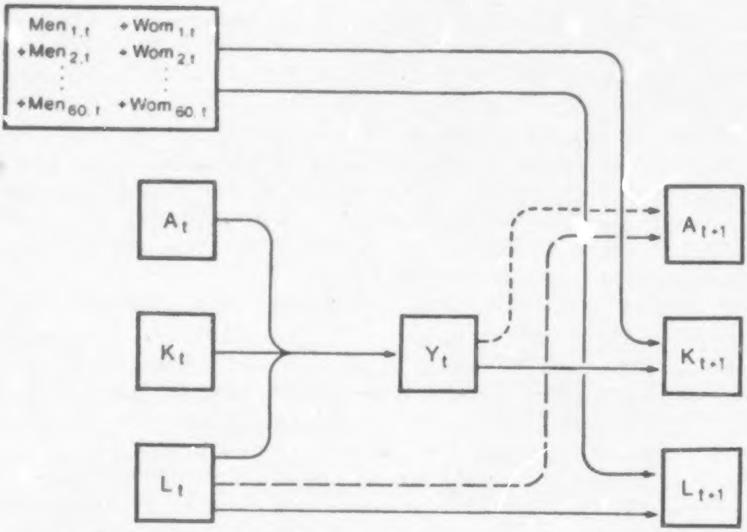
INTRODUCTION

MORE BIRTHS are commonly thought to mean a lower standard of living, both in the short run and in the long run. The root of the argument is first-edition capital-dilution Malthus: Adding people who must work and live with the original fixed supply of land and capital implies less product available for each person. *The Limits to Growth* simulation (Meadows et al., 1972) only expands this argument with a complex and sophisticated method.

If, however, one adds to the simple neo-classical model another fundamental fact of the economic growth of nations--the increase in productivity due to additional people's inventive and adaptive capacities--one arrives at a very different result.

This chapter constructs and experiments with a simulation model of the effect of population growth on per-worker output in MDC's. This model is outlined in Figure 6-1. It embodies not only the standard classical and neo-classical capital effects but also the effects of knowledge advance, economies of scale, and natural resource use. The latter elements have been omitted from population models in the past, but they are crucial to a balanced understanding of the problem. Chapters 3, 4, and 5 analyzed the available data and provided rough estimates of the parameters for use in the models constructed in this chapter.

The various models given in this chapter are intended to be illustrative and suggestive, and do not purport to represent either the United States or any other single country or the developed world as a whole. The central finding results from adding a single element--the effect of population size upon productivity--to a simple conventional model, within what seem to the writer to be reasonable ranges of the basic parameters. But though it is true that one can immediately deduce from the input arguments the main *directional* conclusion--that at some point in the future, per-worker output may begin to be greater with a higher population growth rate--the simulation is needed to tell *when if ever* the effect becomes positive under various assumed conditions. One cannot know from examination of the model's structure alone whether this will be in 30 or 300 or 3,000 years. The results of the simulation suggest that the answer is between 30 and 80 years.



Note: The line with long dashes from L_t to A_{t-1} represents the feedback effect in the Residual model, whereas the line with the short dashes from Y_t to A_{t-1} represents the feedback effect in the Verdoorn model.

FIGURE 6–1 SCHEMATIC OF MDC MODELS WITHOUT EDUCATION

The result that population growth's effect becomes positive after 30–80 years is arrived at with two separate but related approaches. The aim of both models is to estimate quantitatively the interaction and ultimate net effects of the negative and positive impacts of population growth. Both models embody—in addition to the conventional economic considerations including the effects of dependency and labor-force participation—the impact of additional people upon technological advance through the creation of knowledge and through the economies of larger scale, working together with the natural-resources effect.

One of the models embodies this knowledge-and-scale effect directly by way of the assumption that the observed "residual" in studies of economic growth—the over-all growth of productivity due to technological advance—is a function of the labor force and the creativity found therein at all levels. The "Residual model" approach makes sense a priori, but the empirical evidence for it is only vague. Therefore, a second model is constructed that takes advantage of Verdoorn's empirical law that productivity goes up as the square root of total output. This "Verdoorn model" is an indirect way of getting at the same effect as does the Residual model. Total output is a function of the size of the labor force, and Verdoorn's law may be thought of as a proxy for the relationship of labor force to productivity and technological advance. Or if one prefers, one may think of it simply as a net estimate of returns to scale.

It is encouraging that the Residual model and the Verdoorn model give similar results. This strengthens belief in the reasonableness of both models and in the general result they jointly yield. The over-all finding is that within 30 to 80 years, the initial negative effect of another birth upon per-worker output is displaced by a positive effect that rapidly increases in magnitude as the person's legacy of productivity advance accumulates. The length of the time required for the effect to become positive depends upon the parameters one decides are most reasonable.

This chapter may be viewed as an attempt to quantify[1] Kuznets' masterful paper (1960). In the formal approach used here, many of the influences discussed by Kuznets and by Chapters 3 and 4 are necessarily left out. Also, this chapter is not an empirical study, but rather is a theoretical exercise which uses the simulation technique instead of analytic methods. This has the disadvantage of less generality than analytic methods, because the results hold only for the specific sets of parameters on which the models are run, and apply only by analogy to other sets of parameters within the ranges of the simulated sets. Unlike analytic methods, no results are proven to hold for all cases consistent with the basic assumptions. On the other hand, the simulation method has the advantage of allowing one to theorize about a much richer and more realistic model than analytic methods allow, and with more specificity.

The context of the chapter is near-full employment. The time horizon—perhaps 50 or 150 years—is sufficiently short so that possible major changes in the natural resources situation may be disregarded, but sufficiently long so that delayed effects of knowledge can come to play their role.[2] Also, it is crucial to note that though the terms of reference are to the United States, it would be most appropriate to conduct this analysis for the developed world as a whole, because of the scientific and technological inter-dependence among the MDC's. This point of view skirts the possibility that one country might decide to take a ride on the coattails of technological advance created by other countries.[3]

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[1] "we have no tested, or even approximate, empirical coefficients with which to weight the various positive and negative aspects of population growth" (Kuznets, 1960, p. 339).

[2] Einstein lowered per-capita income for the years during his childhood. Even in his scientific manhood the results of his research may have had no beneficial impact. But starting perhaps 80 years after Einstein's birth, and continuing thereafter, his birth caused great economic gain.

[3] Some individual countries might indeed reason this way. The extent to which all knowledge requires local research, development, and experience for satisfactory adaptation may easily be underestimated, however.

PER-WORKER INCOME IN MDC'S

The purposes of the chapter are these: (1) to understand in the history of industrial nations the influences of population growth on income through changes in capital, scale and knowledge; and (2) to consider what the future course of output per worker might be with higher or lower birth rates.

The dependent variable is output (or income) *per worker*,[4] and not output or consumption per capita (or per-consumer-equivalent).

In the long run the two measures are much the same. In the short run an increase in population through an increase in fertility necessarily implies a drop in consumption per capita even if output per worker remains the same, because the total number of workers remains the same while the number of people increases (a point discussed at greater length in the Appendix to Chapter 10). In the household, income is then spread among more people. And when population grows faster there is greater public consumption of education and other child-raising services,[5] which implies larger taxes and less resources available for private consumption and saving.

But in the long run, measures of consumption per capita and output per worker will give much the same result, and the focus here is on the long run. Furthermore, lower per-person consumption need not mean lower total utility. In fact, depending on one's social welfare function, the same total consumption spread among more people might be seen as yielding higher total utility.

THE FEEDBACK MODELS

Kuznets (1960) suggested that an additional person's contribution to knowledge might lead him to have a net positive effect upon the standard of living. But Kuznets did not quantify the argument or compare the likely effect of the additional knowledge against the classical capital-diluting effects of population growth. Such quantification, leading to an estimate of how long it takes for the effect to become positive (if ever), is the aim of the models used here.

Except for the feedback effect to allow for the influence of population growth or output growth upon productivity, the models are quite unexceptional: a Cobb-Douglas production function, allowances for the effects of the rate of dependency upon saving and labor-force participation, and a simple demographic model in which all persons enter the labor force at 21 and work until they die at age 60. The effect of population growth upon education is a bit less standard, and several variants are used. But those details may be left for later. This section takes up the central feedback elements of the two alternate models.

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[4] It is *not* assumed here that per-capita income is the appropriate measure of welfare; in Chapter 19, I argue that it is not. But per-capita income is *one* of the arguments in almost everyone's welfare function.

[5] The investment aspect of education will be treated later.

Notation

A_t = level of the economy's productive efficiency as of year t

ART = complex of natural resources, economies of scale, and technological knowledge

EFF_t = the effective labor force; the number of workers weighted by their education

K_t = stock of capital

L_t = number of people in the labor force

$\mathrm{MEN}(i)_{j,t}$ = number of males of age j alive as of year t in demographic structure i

$\mathrm{POP}(i)_t$ = total population in year t in demographic structure i

R_t = natural resources available for use

S_t = total resources spent on physical investment and education

XED_t = expenditure on education

$\mathrm{WOM}(i)_{j,t}$ = number of females of age j alive as of year t in demographic structure i

Y_t = the aggregate output

e_L = elasticity of labor force with respect to children born

e_s = elasticity of the saving ratio, s, with respect to number of children

s_t = the proportion of saving to output

w = ratio of children age 20 and under to adults ages 21–60

α = exponent of capital in Cobb-Douglas production function

β = exponent of labor in Cobb-Douglass production function

The Residual Model

The Residual model derives an estimate of the effect of population growth upon the indissoluble complex[6] of knowledge creation, natural

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[6] To disentangle the three ART factors from each other seems hopeless. Rather they must be treated together as a complex, and doing so is a main methodological feature of this study. To illustrate why they must be treated together, consider natural resources first. Natural resources might be thought of as a third factor of production

$$Y_t = AK^{\alpha}L^{\beta}R^{\gamma}$$

and it would seem reasonable that R_t is a negative function of output in previous years, perhaps the sum of the previous output resources, and economies of scale—hereafter referred to with the acronym "ART complex"—from the "residual" found in studies that attempt to explain U.S. economic growth. The residual is the unexplained portion of economic growth left after inputs of capital and labor have been accounted for; it is commonly associated with technological advance.

The Residual model assumes that the size of the residual is a function of the size of the labor force. In this formulation the residual is positively influenced by population growth, which is a quantitative expression of Kuznets' qualitative assertion. In the context of the Cobb-Douglas production function, the residual may be seen as changes in technological level, *A*. The problem about whether the increases in capital (and labor) should or do reflect improvements due to increased knowledge is critical here, but we shall merely look the problem in the face and then pass rapidly on.

The ART element is introduced as follows. The amount of change in *A* is assumed to be a function of the entire labor force. But an increase in the knowledge component of ART does not result in an instantaneous increase in productivity; rather, the effect of much knowledge is substantially lagged. The extent of the lag in the application of knowledge

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$$R_t = f\left(\sum_{t=0}^{t} Y_t\right).$$

The last equation is consistent with the static physical point of view that natural resources such as coal and oil must diminish over time. But the definition of resources by the amounts that are "really" in the earth is not operational and hence meaningless. What is relevant is that the economically meaningful *available* resources have mostly *not* decreased over time, as Barnett and Morse (1963) have shown. This increase in available resources is a function of increasing knowledge, e.g., new ways to prospect for and retrieve oil, new plastic materials to substitute for metals, and improved forestry techniques. Seen this way, natural resources are not different from physical capital. We may therefore think about the stock of available resources at time t as part of the capital factor, and the future course of the stock of natural resources will be affected by saving and by increase in knowledge in the same way as conventionally-defined physical capital.

Considering economies of scale and technological knowledge, now: The two factors conceptually could be separated. One may imagine an experiment in which every other person and installation in the United States would be removed, holding the stock of knowledge constant, to see the effect upon output per worker. But such an experiment is not feasible, and the growth of scale and of knowledge have been so collinear in the past that it is not possible to separate them statistically. For this reason, and also because of their inseparability in the production process, we must treat them together. Kuznets emphasized this inseparability (in conversation). And Fellner uses a framework in which "economies of scale . . . become merged with 'progress'" (1970, p. 9).

Denison's attempt (1967) to get at the effect of scale is useful but does not resolve this difficulty, I believe. In passing, one might note that his estimate of the rate of advance of knowledge alone is "much smaller than the increases in the population . [which] implies a declining per capita contribution to knowledge" (1962, p. 237). In the context of this paper, it should be remembered that such advance in knowledge is only one of the sources of contribution to the ART complex.

is an important empirical question concerning which I know of no evidence (though it would seem that the length of the lag is decreasing). Let us suppose that the present mean of the lag distribution for the ART complex as a whole, for an average cross-section of workers, is 5 years. This means that the first increment to the productivity residual can be dated at 5 years after the incremental workers enter the labor force, with an *additional* increment to productivity in each of the following 40 years until 5 years after they retire. The equation for the change in A in the main approach is as follows:

$$\frac{A_t - A_{t-1}}{A_{t-1}} = bL_{t-5}, \quad \text{or} \quad A_t = A_{t-1} + bA_{t-1}L_{t-5}, \qquad (6\text{-}1\text{a})$$

where b is chosen so that $A_{t=1} = (1 + x)A_{t=0}$ in the basic demographic structure, and x is the parameter[7] relating the size of the labor force to the increase in the ART complex, that is, A. When x is set at .01, a stationary labor force in period $t = -5$ would produce a .01 increase in $A_{t=0}$. If the labor force is growing at a rate of Δ per year, the labor force in year $t = -5$ causes $A_{t=0}$ to be $(1 + \Delta)(.01)A_{t=-1}$. That is, in the context of this model, the increase in A from year to year is proportional to the size of the labor force. This mechanism is calibrated so that the labor force at time $t = -5$ in structure BASE produces an x increase in A_t in year $t = 0$, where x is whichever of .01, .015 or .02 is being tried in that run. The point to notice here is that the ART additions from an increment of workers, knowledge and economies of scale are *cumulative and nondepreciating*, as is the stock of productive know-how.

One source for an estimate of the growth in per-worker output due to the increase in knowledge and scale, including the effect of natural resources, is Denison (1967), who estimated the effect of elements roughly comparable to ART. For the period 1950–62 for the United States, Denison estimated yearly growth of .76% for "advances in knowledge" (which excludes the effect of education on the labor force), and .30% for "economies of scale" (1967, p. 298), for a total just over 1%. For Northwest Europe he estimated .76% for "advances in knowledge," .56% for "changes in the lag in the application of knowledge, general efficiency, and errors and omissions," and .41% for "economies of scale" (pp. 287, 300), for a total of something over 1.5%. Solow's estimate for the United States for the 40 years from 1909 to 1949 is about 1.5% per year (1957, p. 316). Solow also adduces, though "not really comparable," an estimate of .75% per year from 1869 to 1948 by Valavanis-Vail, and Schmookler's estimate for 1904–13 to 1929–38 which (though including agriculture) was of similar size to Solow's estimate.

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[7] If no lag were involved, b would equal x.

If a larger labor force causes a faster rate of productivity change, one would expect to see this reflected in observed changes in the rate of productivity advance over time in the United States. In fact, Solow concludes that the yearly rate of change of A went from 1% to 2% over the 20 years from the (median of the) first half of his study period to the (median of the) second half of his period (1957, p. 320). Fellner, using Kendrick's data, arrived at these rates of productivity increase over time (using two methods of calculation): 1900–29: 1.8% (or 1.5%); 1929–48: 2.3% (or 2.0%); 1948–66: 2.8% (or 2.3% and 2.6% for the two subperiods within 1948–66; 1970, pp. 11–12). These data are consistent with the assumption that the rate of increase of productivity is indeed higher when population is larger—though other factors could explain part of the rate of increase, of course.

The model will be run with estimates of 1.0%, 1.5%, and 2.0%. Most of the reported results will pertain to the "conservative" estimate of 1.5%, roughly the average for the twentieth century which is well below the rate observed for the most recent period.

The reader may not feel comfortable with this method of estimating the feedback effect of the ART complex. But to just ignore the effect altogether is not a reasonable alternative. To leave out the effect is to implicitly estimate that the effect is zero (which is what all the classical models do). But certainly there is overwhelming evidence that the effect is not zero, though its size is difficult to estimate. Hence, it would seem that the appropriate argument is about how to estimate it, and which estimates to use, rather than whether to include the effect at all.

The reader may object that advances in knowledge have not been linked solidly to population at a micro-economic level. True. But where else but from people's minds, past and present, can advances in knowledge come from, holding the quantity of capital constant? Physical capital alone cannot generate advances in knowledge, though it may serve as a basis of ideas to people. All the advances-in-knowledge concepts that Denison mentions are related to people: "Knowledge concerning the physical properties of things, and of how to make, combine, or use them in a physical sense" (p. 280); "managerial knowledge" (p. 280); "organized research" (p. 287). As noted earlier, it is possible that there are interactions among people such that the quantity of advance in knowledge is not a simple linear function of the number of people, but the evidence does *not* show that any such interaction is *less* than a simple linear function.

It may be useful to show some static partial computations to illustrate the main forces operating. Assume that in the year $t = 1$, *and only in that year*, the cohort of workers aged 21 is larger than in the base demographic structure, and hence the work force as a whole is larger than it would otherwise have been. Assume also that the exponent of labor $\beta = 2/3$ in the Cobb-Douglas production function, and the base yearly increment due to gains in knowledge is 1%. If one calculates separately the drop in per-worker product from the capital-dilution effect, and the rise in output due to the ART effect as in equation (1), in year $t = 5$—the first year in which this cohort's ART contribution to A is felt—the downward push from the former effect is 32 times the upward push from the latter effect. But in the second year, $t = 6$, the drop from the capital effect is only 16 times the rise from the ART effect, because the incremental workers have now contributed *two* ART increments to A. In the third year the ratio is 32 to 3. In less than 32 years the two effects would be roughly equal, and product per worker would be about what it would have been if the incremental workers had not entered the work force. From then on, product per worker is higher than it would otherwise have been.

This static model allows us to understand the mechanism by which faster population growth may overcome the drag of capital dilution. But a full dynamic simulation with reasonable parameters is necessary to tell us whether the net effect really *is* likely to become positive. Perhaps more important, the dynamic simulation is needed to indicate the *length of time* the process is likely to take.

Now we turn from the Residual model to an entirely different way of getting at the same question, the Verdoorn model.

The Verdoorn Model

Verdoorn[8] found that in a sample of industries over the periods 1870 to 1914 and 1914 to 1930, productivity rose as the square root of total output. Other sorts of evidence consistent with this "law," were discussed in Chapter 4.

Verdoorn's law provides another approach to our subject. Additional workers certainly are not the only cause of increased outputs. But over any period longer than the business cycle, the size of the labor force is a major influence upon total output. And if one holds constant the capital endowment and the original level of technological practice in a *ceteris paribus* analysis, then population size is the *only* influence upon total output. Therefore, it is reasonable to think of Verdoorn's law as a proxy for the labor force-productivity change relationship; that is, output itself does not change productivity, but rather the people engaged in producing that output change productivity (and in fact, Verdoorn explains his law as caused by learning; Clark, 1957, p. 357). One may, of course, also think of Verdoorn's law simply as an empirical estimate of economies of scale without specifying a behavioral mechanism. Either interpretation is consistent with the work here.

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[8] Verdoorn published his findings in *L'Industria*, No. 1, 1949, pp. 45–46. I have been unable to obtain a copy of that publication, and hence I rely on the reports by Balassa (1961) and Clark (1957, 1967).

In the Verdoorn model, the Equation 6-1b is used where Equation 6-1a is used in the Residual model:

$$\frac{A_t - A_{t-1}}{A_{t-1}} = b\sqrt{bY_{t-1}} \quad \text{or} \quad A_t = A_{t-1} + bA_{t-1}\sqrt{Y_{t-1}} \qquad (6\text{–}1\text{b})$$

where b is chosen so as to provide the desired initial rate of productivity change in the base population, for example, 1%, 1.5%, or 2%.

"Learning by doing" accounts for part of the effect of the rate of output upon productivity. The increased efficiency of production within firms and industries as experience accumulates has been well documented in many industries, starting with the air-frame industry in the 1930's (for bibliography see Arrow, 1962). But intra-industry learning is only one of the many productivity-increasing mechanisms that are at work as over-all output increases. In addition, each industry benefits by the advances in other industries. But the latter effect does not appear in the sort of industry studies done by Verdoorn, Rostas (1948), Paige and Bombach (1959), and the subsequent tradition. Therefore, such intra-industry estimates may understate the economy-wide effect.

One might wonder whether it is proper to extend Verdoorn's law from individual industries to an economy as a whole. One might also question whether the observed relationship shows an influence of new-discovery-caused increases in productivity on total output rather than the converse. But at least one of the main sorts of data used by Verdoorn and by Clark to support Verdoorn's law—the Rostas and the Paige and Bombach data on two countries at two points in time, all compared to one country at the earlier date—is reasonably free of both of these problems; both countries have the same access to new knowledge, so exogenous discoveries are not likely to account for the observed relationship. The fact that new basic discoveries do not account for the observed relationship also allays worry that Verdoorn's law at the level of industries only reflects a shift in resources among the industries in response to new opportunities. Hence, aggregation does not seem to run the danger of a composition fallacy. Another reason not to believe that productivity is responsible for the output differences in these data is Schmookler's (1962) demonstration that, to an important degree, advances in knowledge are induced by demand rather than the relationship running mainly from productivity to output via prices.

OTHER ELEMENTS OF THE MODELS

The Demographic Structures

The population and labor-force structures to be compared, shown in Figure 6–2, are as follows: The comparison base, structure "BASE," has an exo-

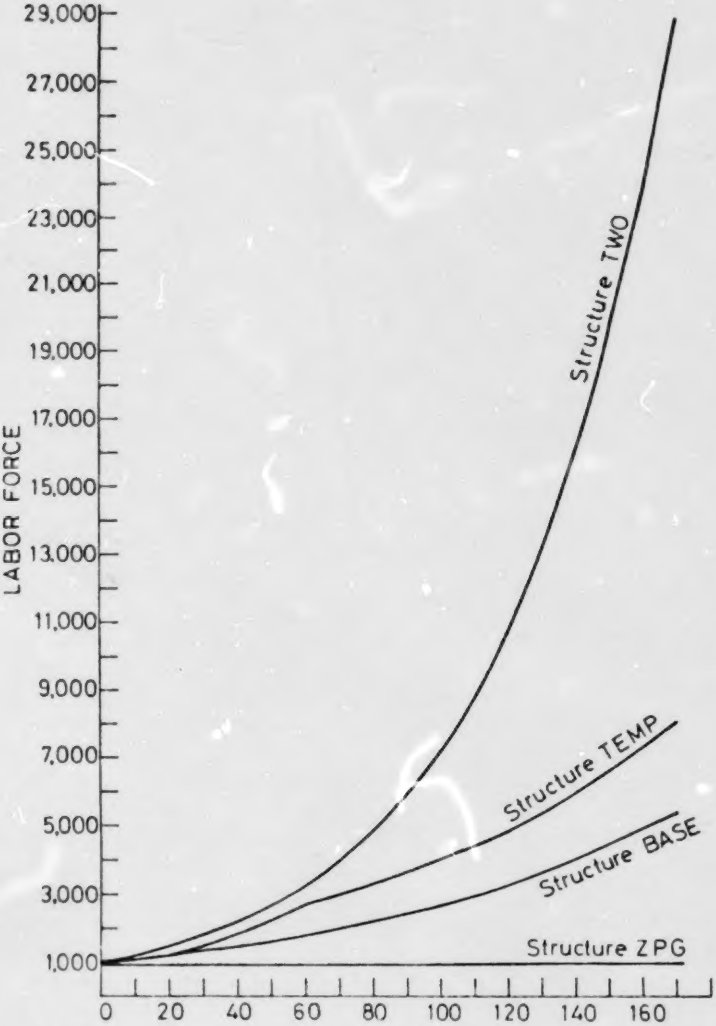

FIGURE 6-2 LABOR FORCES IN VARIOUS YEARS IN VARIOUS DEMOGRAPHIC STRUCTURES: THE BROAD PICTURE

genous 1% growth in the birth-rate each year, that is, $\mathrm{WOM(BASE)}_{1,t} = 1.01\mathrm{WOM(BASE)}_{1,t-1}$, and $\mathrm{MEN(BASE)}_{1,t} = 1.01\mathrm{MEN(BASE)}_{1,t-1}$, starting in year $t = -60$. In this and in all other population structures infants live until they enter the labor force at age 21, and also through the end of their labor-force service at age 60, that is, $\mathrm{MEN}_{1,t} = \mathrm{MEN}_{21,t+20} = \mathrm{MEN}_{60,t+59}$, and the same for females. The number of males and females of each age are equal in this and in all other structures. (All children are assumed born on January 1, and up until the end of their first year the cohort is labeled MEN_1 and WOM_1. Adults are assumed not to matter economically after age 60.)

The population in year $t = 0$ in structure BASE is

$$\begin{aligned}
\mathrm{POP(BASE)}_{t=0} &= \mathrm{MEN(BASE)}_{60,t=0} + \mathrm{WOM(BASE)}_{60,t=0} \\
&\quad + \mathrm{MEN(BASE)}_{59,t=0} + \mathrm{WOM(BASE)}_{59,t=0} \cdots \\
&\quad + \mathrm{MEN(BASE)}_{1,t=0} + \mathrm{WOM(BASE)}_{1,t=0} \\
&= \mathrm{MEN(BASE)}_{60,t=0} + \mathrm{WOM(BASE)}_{60,t=0} \\
&\quad + (1.01)\ \mathrm{MEN(BASE)}_{60,t=0} \\
&\quad + (1.01)\ \mathrm{WOM(BASE)}_{60,t=0} \\
&\quad + (1.01)^2\ \mathrm{MEN(BASE)}_{60,t=0} \\
&\quad + (1.01)^2\ \mathrm{WOM(BASE)}_{60,t=0} \cdots \\
&\quad + (1.01)^{59}\ \mathrm{MEN(BASE)}_{60,t=0} \\
&\quad + (1.01)^{59}\ \mathrm{WOM(BASE)}_{60,t=0} \qquad (6\text{–}2)
\end{aligned}$$

In structure BASE, in which births increase 1% per year, half the women are assumed to work. The labor force L at time $t = 0$ is then

$$L\mathrm{(BASE)}_{t=0} = \sum_{j=21}^{j=60} \mathrm{MEN(BASE)}_{j,t=0} + .5 \sum_{j=21}^{j=60} \mathrm{WOM(BASE)}_{j,t=0}$$

In structure "TEMP" the population is "temporarily" augmented by a 50% increment in the birth rate in just a single year, $t = 1$, that is, $\mathrm{MEN(TEMP)}_{1,t=1} = 1.51\ \mathrm{MEN(TEMP)}_{1,t=0} = 1.51\ \mathrm{MEN(BASE)}_{1,t=0}$. All other cohorts remain the same as in structure BASE. Hence for the 40 years from $t = 21$ to $t = 60$ there is in structure TEMP a single cohort that is roughly 50% larger than its next-aged cohorts, and the labor force is larger by that many workers for the 40-year period. This may be seen in Figure 6–3, which shows the fine detail from Figure 6–2 for the first thirty years after $t = 0$.

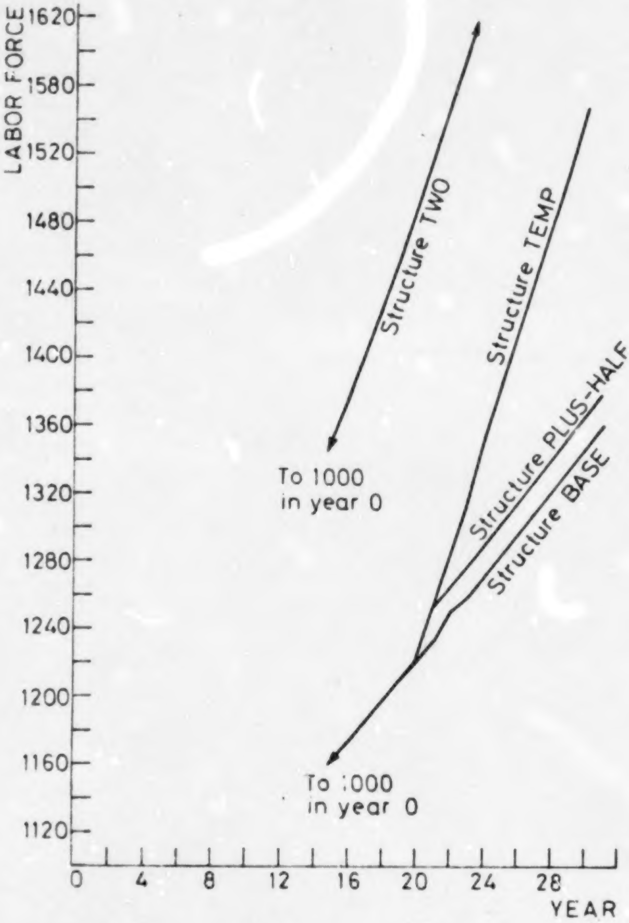

FIGURE 6–3 DETAILS OF LABOR FORCES IN EARLY YEARS IN VARIOUS DEMOGRAPHIC STRUCTURES

In structure "PLUS-HALF" the birth-rate is incremented by 50% over structure BASE in year $t = 1$, but unlike structure TEMP, the bulge continues in each successive year. That is, in structure PLUS-HALF, $\text{MEN(PLUS-HALF)}_{1,t=1}$, and $\text{MEN(PLUS-HALF)}_{1,t=3} = 1.01\ \text{MEN(PLUS-HALF)}_{1,t=2}$, and so on. Hence all cohorts from $t = 1$ onward are more than 50% bigger in structure PLUS-HALF than in structure BASE.

It is worth noting that after an adjustment period the dependency ratio, w, is again the same in structure PLUS-HALF as in structure BASE.

In structure "TWO" the birth-rate rises by 2% a year instead of the 1% in structure BASE, that is, $\text{MEN(TWO)}_{1,t+k} = 1.02\ \text{MEN(TWO)}_{1,t+k-1}$.

In structure "ZPG" the birth rate is the same in every year, a "stationary" population with zero population growth.

The simplicity of this model stems largely from the fact that the total amount of labor supplied is fixed exogenously, as seems reasonable in an MDC, rather than depending upon income and tastes. This is unlike the LDC situation to be seen later, where the total amount of hours worked is endogenous to the system even when the potential labor force is fixed exogenously; in LDC's the amount of agricultural work supplied is a function of death and sickness rates, and—even more importantly—of tastes influenced by family size and prices of industrial goods. This means that the entire demand side of the system need not be dealt with at all in MDC's, though it must be surely be dealt with in LDC's.

The Production and Saving-Investment Function

The general framework is a Cobb-Douglas function such as

$$Y_t = A_t K_t^{\alpha} L_t^{\beta}, \tag{6–4}$$

where $\alpha = .33$ and $\beta = .67$.

This aggregate production function is a major simplification of the two-sector agriculture-and-industry general model described in Chapter 2. The simplification to one sector is reasonable because agriculture is a small part—perhaps only a tenth or a twentieth—of the total economy of the developed world. This enables us to avoid the complexity of the allocation of labor to the two sectors, and also explains why we need not deal with endogenous variations of work hours by agriculturalists as a function of family size, prices of industrial goods, and other influences.

Next comes the net investment function, which for simplicity is a proportion of each year's income where $s = .06$

$$K_{t+1} = K_t + sY_t. \tag{6–5}$$

The Effect Through the Supply of Parents' Labor

Incremental babies will cause some women to be out of the labor force who would otherwise work outside the home. From studies of U.S. census data based on work by Bowen and Finegan (1969), Cain (1966), and Sweet (1970) together with the assumption that each woman will have at least one child, I have calculated that an incremental child results in a total decrease of .45 of a woman's work year, spread over the two years after the child is born. On the other hand, by my calculations from the

1960 U.S. census, an incremental child causes a total increase in .10 of a man-work-year by fathers, spread over 25 years (details in Chapter 3).

In those simulations runs in which the labor force is to be adjusted for the effect of children on the supply of labor,

$$\begin{aligned} L_t = \sum_{j=21}^{60} \mathrm{MEN}_{j,t} &+ .0025\,(\mathrm{MEN}_{1,t} + \mathrm{WOM}_{1,t}) + .0025\,(\mathrm{MEN}_{2,t} \\ &+ \mathrm{WOM}_{2,t}) + \cdots + .0025\,(\mathrm{MEN}_{25,t} + \mathrm{WOM}_{25,t}) \\ &+ .5 \sum_{j=21}^{60} \mathrm{WOM}_{j,t} - .22\,(\mathrm{MEN}_{1,t} + \mathrm{WOM}_{1,t}) \\ &- .22\,(\mathrm{MEN}_{2,t} + \mathrm{WOM}_{2,t}). \qquad (6\text{-}6) \end{aligned}$$

The effect of incremental children on the parents' labor supply will be shown in the comparisons of structures TEMP and PLUS-HALF to structure BASE; in these cases all conditions are the same up to time $t = 0$, and different thereafter as the numbers of births differ. But there seems to be no way to compare the labor-force effect of additional children in stable populations with different rates of growth, that is, structure-TWO versus structure BASE.

Surprisingly, however, the effect of incremental children on the parents' labor supply turns out not to be important in sensitivity analyses. This can be seen in even an unrealistically high upper-limit estimate of the effect of incremental children on the economy through the parents' labor-force. If the birth-rate is a low 25 per 1,000 and there are a low 400 employed workers per 1,000, a *doubling* in the birth rate would only mean a drop in the labor-force to $(400 - .45 \times 25) = 389$, or about 3%, using an estimate of .45 worker-years lost per incremental child. Total output would drop even less, maybe 2%. Physical saving might then go down by, say, $(.12 \times .02) = .0024$ of total output. The cumulative effect on output would be very small as a result of even such an improbably large change in an MDC's birth rate over a decade.

The Effect through Changes in Private Saving of Physical Capital

Several kinds of evidence, discussed in the previous chapters, are relevant for an estimate of the effect of the number of children on private saving. These include family budgets, cross-sections of nations, and time-series evidence. One may find support for an estimate higher than -1.0, or as low as 0, for the elasticity of the proportion of income saved with respect to a proportional change in family size. Separate simulation runs were therefore made with elasticities of -1, $-.5$, and 0, though most runs reported here use −.5. The ratio,

$$w = \frac{\sum_{j=1}^{20} (\mathrm{WOM}_{j,t} + \mathrm{MEN}_{j,t})}{\sum_{j=21}^{60} (\mathrm{WOM}_{j,t} + \mathrm{MEN}_{j,t})},$$

is computed for each year in each case. For structure BASE it is .67 for each year, and is referred to as $\hat{w}$. In other structures the saving ratio for each year is then calculated as

$$s_t = \hat{s}\left[1 + e_s\left(\frac{\hat{w} - w_t}{\hat{w}}\right)\right], \qquad (6\text{–}7)$$

where $\hat{s}$ is the proportion of income saved in structure BASE, and e_s is the elasticity of saving with respect to children.

The Effects of Schooling

Schooling is the only social expenditure considered here. Two aspects of education are relevant. First, more children mean higher expenditures on education, which may cut into investment on physical capital as well as reducing consumption. Second, if incremental expenditures on schooling are less than proportional to the number of incremental children and if there are no economies of scale in education, an increased number of children will cause a lower average quality of the work force in future years.

The bases for the estimate of the effect of children on public schooling costs are as follows: (1) Expenditure on education is 4.6% of U.S. national income (Harbison and Myers, 1964, p. 41); (2) A quarter of the population is in school, 18.4% of the population being in the 5–14 age group (*ibid.*); (3) In 1968, $623 per year was spent by public schools per student year (*Statistical Abstract*, 1969, p. 102); (4) $6,856 average year-round male earnings in 1966 (*Statistical Abstract, 1969*, p. 233). This estimate excludes foregone earnings, on-the-job training costs, etc.; (5) A high-side inclusive estimate of U.S. education plus training costs is 12.9% of adjusted GNP, by Machlup (Harbison and Myers, 1964, p. 28n). How much of children's education expenditures should be considered as *consumption* is a matter not considered here. On the basis of these data, the base expenditure on education is assumed to be 6% of gross national product.

The responsiveness of educational expenditures to increases in the number of children is also important. As discussed in Chapter 4, based on the studies of Miner (1963) and McMahon (1970) for the states in the

United States, I have calculated that the elasticity (the index of proportionality) is not far from unity, and perhaps equal to unity. That is, an increase in population in the United States can be expected not to reduce the level of education per child, if these data are appropriate. (On the other hand, no data known to me provide the basis for any estimate of the effect of educational expenditures upon investment in physical capital. The best that can be done, therefore, is to try out several possibilities in the simulation.)

Education is treated in several ways. In the basic no-education variant, education is ignored completely, and investment in physical capital[9] is 6% of output each year in all the demographic variations. In variant B, the level of education as measured by expenditures per child per year of school age is fixed and rising at 1% per year, because the annual increase in average school-leaving age has been of this general magnitude in the last half century in the United States. In the base year (and also for all other years in structure BASE) expenditure on education, $\mathrm{XED}_{t=0}$, is 6%. In all years, the total expenditure in physical investment plus education is

$$S_t = \mathrm{XED}_t + (K_t - K_{t-1}). \qquad (6\text{-}8)$$

That is, an increase in education expenditure implies a decrease in physical investment. In each year after $t = 0$ the expenditure on education is made a function of the number of children.[10]

$$\mathrm{XED}_t = \mathrm{MEN}_{j=6}q_{k=6} + \mathrm{MEN}_{j=7,t}q_{k=7} \ldots \mathrm{MEN}_{j=20,t}q_{k=20}, \qquad (6\text{-}9)$$

where the relationships among the expenditures for various school years, q_k, are fixed according to a crude schedule, for example, grade 1 = 1, grade 2 = 1.125 . . . grade 9 = 8. . . . The effective labor represented by a worker in any year in variant *B* is the square root of the total amount spent on his schooling during his youth.[11] The effective labor force in any year, EFF_t, is the sum of the persons of labor-force age weighted by their effective labor values

$$\mathrm{EFF}_t = \sum_{j=21}^{j=60} \mathrm{MEN}_{j,t} \sum_{k=6}^{k=20} (q_{j,k})^{1/2}, \qquad (6\text{-}10)$$

where the subscript *k* refers to the various years in the past when the cohort received its education.

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[9] The corresponding initial capital-output ratio is 3. Runs were also made with a savings rate of .12 and a capital output ratio of 4, with much the same results.

[10] Showing only males in equation (6–9) is shorthand for showing both male and female children.

[11] See Denison (1969) for relationships between years of schooling and earnings, the latter a proxy for individual productivity.

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In variant *C*, the level of education is not fixed exogenously. Rather, the total amount spent on education is made a function of the dependency ratio weighted by the relative school-year cost in each cohort.

$$\mathrm{XED}_t = \frac{\sum_{j=6}^{j=20} \mathrm{MEN(i)}_{j,t} q_k}{\sum_{j=21}^{j=60} \mathrm{MEN(i)}_{j,t}} \Bigg/ \frac{\sum_{j=6}^{j=20} \mathrm{MEN(BASE)}_{j,t} q_k}{\sum_{j=21}^{j=60} \mathrm{MEN(BASE)}_{j,t}}, \qquad (6\text{-}11)$$

where i refers to a demographic structure other than BASE. This model suggests that the standard of education falls if the number of children rises.

A more refined model would change the proportions over time of each cohort getting education and working. But such modification would not be likely to affect the particular sorts of conclusions this chapter is intended to provide.

The effect on *saving* of the social spending for education and other children's services is most unclear. To my knowledge, there is no basis on which to estimate either the elasticity of spending on schools with respect to population growth, or the extent to which the incremental expenditures on schools substitute for other social investment without causing new tax levies. I shall therefore simply assume that the three private saving elasticities being tried will bracket the elasticity that includes social as well as individual saving.

In variants *B* and *C* the labor-force argument in the production function is replaced by the effective labor force

$$Y_t = A_t K_t^{\alpha} (\mathrm{EFF})_t^{\beta} \qquad (6\text{-}12)$$

The Effect through the Increments to the Labor Force

Now let us move ahead to the time when the incremental children enter the work force. If the capital stock does not receive an increment proportionally as large as the increment to the work force—or, *a fortiori*, if the capital stock is even smaller than otherwise due to a reduction in saving—then per-worker output will be lower than otherwise.[12] This is the fundamental Malthusian element.

The model begins in each case with $L_{t=0} = 1$ and $K_{t=0} = 1$. $A_{t=0}$ is started at $\frac{1}{3}$. Separate runs were made with the savings elasticity at

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[12] If the family and society save enough extra so that average capital per worker would be the same with or without the increment of children, as may be the case with the Hutterites, per-worker income would be the same after the incremental workers entered the work force. But this must occur at a cost of lower per-consumer consumption prior to the years of labor force entrance.

−1.0, −.5, and 0, and both with and without the adjustment for the parents' labor-force effect.

RESULTS

The results for the five demographic structures with the Residual model and the no-education variant are shown in Table 6–1a; the corresponding results for the Verdoorn model are shown in Table 6–1b. Summarized selected results from no-education variant and education variants *B*, and *C* are shown in Table 6–2. The rates of growth from period to period will not be shown for other than the basic models; these "absolute" results were quite unrealistic for the other models because they were run with the same Cobb-Douglas exponents and other parameters as were used in the basic model, and more realistic models would require that these parameters be different when education is handled differently. But the *relative* values among the demographic structures are meaningful, and are shown as percentages of the 1%-growth demographic structure BASE. Also, only the runs with the "conservative" estimates of the ART effect (1.5% per year) will be shown. Runs with more realistically higher estimates show population growth in an even more favorable light.

1. The most important outcome is that under every set of conditions, demographic structures PLUS-HALF and TWO with more rapid population growth come to have higher per-worker income than structure BASE in less than 80 years, even with a base rate of change of .4 of 1%. And in every run, structure TWO, which reaches a labor force (in millions, say) of 23,769 in year $t = 160$ from the starting point of 1,000 in year $t = 0$, has a higher per-worker income than structure PLUS-HALF, which reaches a total labor force of 7,346 in $t = 160$. (For comparison, the labor force for structure BASE in year 160 is 4,913.) And the zero population growth structure (ZPG) holds its advantage over the BASE structure only about as long as BASE holds its advantage over faster population growth.

In many runs the higher fertility structures overtake the BASE structure's per-worker output after only 30 years—which is only about 10 years after the entrance of the first additional children into the labor force.

These results may be compared with the results from classical growth theory where there is no feedback effect; as seen in the first block in Table 6–2, lower population growth has higher output per worker in the classical model. It is true that the long run—30–80 years—is a long way off, and therefore of less importance than the short run. But we should remember that our long run will be someone else's short run, just as our short run was someone else's long run. Some measure of unselfishness should impel us to keep this in mind as we make our decisions about population policy.

Furthermore, the short-run economic differences between the various demographic structures are small by any absolute measure. And as Leibenstein (1972, p. 64) noted, the differences are *relatively* small compared to "other variables which are subject to governmental policies, actions, and influences. The economic implications of the differences between the United States and the Japanese saving rate are much greater than the differences between the demographic structures. A modest decrease in the unemployment rate could more than offset any likely short-run drop in per-worker income due to higher fertility." Leibenstein thinks that even an improved consumer information program and elimination of agricultural price supports could substantially offset higher fertility. So even the short-run negative impact of higher fertility in these models is not of major economic proportions absolutely or relatively.

The mainspring that produces higher per-worker income with higher population is, of course, the element that makes the rate of change in the productivity coefficient A a function of the number of persons in the work force or of total output. One might argue that the basic yearly rate of productivity increase would, in the foreseeable future, be even less than .01, or negative. But one certainly finds no basis in conventional studies of growth of national production using the GNP concept for a belief that productivity will cease to increase.

The higher the base rate of productivity change, the greater must be the relative final advantage of the cases of faster population growth, and the sooner the high population growth structures overtake the BASE structure. In Table 6–1a and Figure 6–4 of the no-educational Residual model, which has the $A_{t=1}/A_{t=0}$ equal to 1.015 and elasticity of savings of -0.5, structure PLUS-HALF overtakes structure BASE at period 50 and structure TWO does so between periods 30 and 40, whereas the overtaking time for $A_{t=1}/A_{t=0} = 1.01$ is between periods 70 for both structures PLUS-HALF and TWO. For $A_{t=1}/A_{t=0} = 1.02$ the overtaking period is even shorter than for $A_{t=1}/A_{t=0} = 1.015$.

2. The dependency effect of incremental children on savings can have substantial impact on the results in structure TWO. In the no-education model with $s = .12$ and $K/Y = 3$ (results not shown), by year 160 the comparison of the -1.0 savings elasticity with the zero elasticity shows ratios of approximately 4 : 5 for the final results, that is, the end result for a structure TWO run is lower by one-fifth when the savings elasticity is -1.0 rather than 0. The -0.5 elasticity produced results roughly in between the zero elasticity and the -1.0 elasticity. But the effect of dependency is quite small relative to the differences in Y/L between structure TWO and structure BASE. For structure PLUS-HALF, the savings effect is *very* small. The savings effect is even less when $s = .06$, as may be expected. All in all, the dependency effect is not of major consequence in the results from these models.

TABLE 6–1a

OUTPUT PER WORKER IN RESIDUAL MODEL: INITIAL CAPITAL-OUTPUT RATIO OF 3, INITIAL PHYSICAL SAVINGS RATE OF .06, LABOR FORCE NOT ADJUSTED FOR EFFECT OF DEPENDENTS, SAVING ELASTICITY OF .50

Base rate of productivity change (% A)	Demographic structure	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170
1.010	BASE*	100	114	135	162	192	234	294	375	495	672	945	1374	2088	3321	5559	9849	18594	
1.010	TEMP	100	114	135	162	189	234	294	381	501	681	954	1389	2112	3357	5622	9963	18804	
1.010	PLUS-HALF	100	114	132	147	177	222	300	441	672	1074	1803	3207	6078	12348	27099			
1.010	TWO	100	111	126	150	189	252	357	555	963	1911	4479	12837						
1.010	ZPG	100	120	141	165	195	231	270	318	372	435	510	498	696	813	948	1104	1287	1500
1.015	BASE	100	120	150	192	249	336	571	684	1035	1654	2754	4890	9255	18804				
1.015	TEMP	100	120	150	192	249	339	577	696	1053	1671	2802	4971	9411	19122				
1.015	PLUS-HALF	100	120	147	177	234	336	528	927	1749	3546	7791	18684						
1.015	TWO	100	117	144	189	264	408	702	1386	3246	9345								
1.015	ZPG	100	126	156	195	243	306	381	477	597	747	933	1164	1458	1821	2277	2847	3558	4449
1.020	BASE	100	129	168	231	330	489	762	1257	2202	4110	8250	17916						
1.020	TEMP	100	129	168	231	330	495	774	1284	2250	4203	8436	18315						
1.020	PLUS-HALF	100	129	165	216	312	504	930	1983	4650	12036								
1.020	TWO	100	123	165	237	372	669	1401	3540	11256									
1.020	ZPG	100	132	174	231	306	405	540	720	963	1287	1725	2313	3102	4164	5589	7509	10089	1356

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* In BASE population growth is one percent per year, in TWO it is two percent per year, and in ZPG population is stationary. Population structures TEMP and PLUS-HALF are explained in the text.

TABLE 6–1b

OUTPUT PER WORKER IN VERDOORN MODEL: OTHERWISE SIMILAR TO TABLE 1a

Base rate of productivity change (% A)	Demographic structure	0	10	20	30	40	50	60	70	80	90	100	110	120	130
1.010	BASE*	100	114	135	159	195	246	324	453	687	1188	2598	9717		
1.010	TEMP	100	114	135	159	195	246	324	456	693	1200	2637	9984		
1.010	PLUS-HALF	100	114	132	150	177	225	306	465	801	1719	6006			
1.010	TWO	100	117	126	147	177	228	315	486	909	2511	23505			
1.010	ZPG	100	120	144	174	213	267	339	441	597	843	1263	2073	3939	9822
1.015	BASE	100	120	153	201	279	420	726	1593	6042					
1.015	TEMP	100	120	153	198	276	420	732	1623	6228					
1.015	PLUS-HALF	100	120	150	186	255	393	750	2133	18234					
1.015	TWO	100	117	141	186	261	420	858	2979						
1.015	ZPG	100	126	162	213	294	423	654	1119	2292	6681				
1.020	BASE	100	129	174	255	423	855	2655							
1.020	TEMP	100	129	174	255	423	861	2715							
1.020	PLUS-HALF	100	129	171	237	378	840	3465							
1.020	TWO	100	123	165	240	417	990	5583							
1.020	ZPG	100	132	186	270	429	765	1695	5949						

*In BASE population growth is one percent per year, in TWO it is two percent per year, and in ZPG population is stationary. Population structures TEMP and PLUS-HALF are explained in the text.

TABLE 6–2
SUMMARY OF RESULTS OF SELECTED MODELS*

Model and variant	Demographic structure	$t = 0$	$t = 20$	$t = 40$	$t = 80$	$t = 160$	Year of crossing
No-feedback model, $\Delta A = 1.015A$	TEMP	1.000	1.000	1.000	1.000	1.000	—
	PLUS-HALF	1.000	1.000	.892	.900	.953	—
	TWO	1.000	.943	.865	.800	.775	—
	ZPG	1.000	1.086	1.135	1.225	1.525	—
Residual model, no-education variant, $\Delta A = 1.01A$	TEMP	1.000	1.000	0.984	1.012	1.013	—
	PLUS-HALF	1.000	0.978	0.922	1.358	—	50–60
	TWO	1.000	0.933	0.984	1.945	—	40–50
	ZPG	1.000	1.044	1.016	0.752	0.069	(40–50)‡
Residual model, no-education variant, $\Delta A = 1.015A$	TEMP	1.000	1.000	1.000	1.017	—	—
	PLUS-NAME	1.000	0.980	0.940	1.690	—	50
	TWO	1.000	0.960	1.060	3.136	—	30–40
	ZPG	1.000	1.040	0.976	0.577	—	(30–40)
Residual model, no-education variant, $\Delta A = 1.02A$	TEMP	1.000	1.000	1.000	1.022	—	—
	PLUS-HALF	1.000	0.982	0.945	2.112	—	40–50
	TWO	1.000	0.982	1.127	5.112	—	20–30
	ZPG	1.000	1.036	0.927	0.437	—	(30)
Verdoorn model, no-education variant, $\Delta A = 1.015A$	TEMP	1.000	1.000	0.989	1.031	—	50
	PLUS-HALF	1.000	0.980	0.914	3.018	—	50–60
	TWO	1.000	0.922	0.935	—	—	50
	ZPG	1.000	1.059	1.054	0.379	—	(50–60)
Residual model, no-education variant, sq. rt. function $A_t = A_{t-1} + bA_{t-1}\sqrt{L_{t-5}}$ $\Delta A = 1.015A$	TEMP	1.000	1.000	1.000	1.009	1.007	
	PLUS-HALF	1.000	0.980	0.909	1.133	—	60–70
	TWO	1.000	0.939	0.948	1.261	—	50–60
	ZPG	1.000	1.061	1.052	0.881	0.250	(50–60)

Verdoorn model, no-education variant, half the rate of change in basic model, $\Delta A = 1.015A$	TEMP	1.000	1.000	1.000	1.008	—	—
	PLUS-HALF	1.000	0.976	0.911	1.040	—	70–80
	TWO	1.000	0.929	0.893	1.048	—	70–80
	ZPG	1.000	1.071	1.107	1.008	—	(80–90)
Residual model, level of education fixed exogenously and expenditures on education a function of number of children, $S_t = S_t^K + S_t^L = .12$. Initial $\Delta A = 1.051A$	TEMP	1.000	0.956	1.013	1.033	—	20–30
	PLUS-HALF	1.000	0.750	0.723	2.451	—	50–60
	TWO	1.000	0.941	1.088	—	—	30–40
	ZPG	1.000	1.015	0.906	0.346	—	20–30
Verdoorn model, same education variant as line above, $\Delta A = 1.015A$	TEMP	1.000	0.950	1.000	—	—	40
	PLUS-HALF	1.000	0.733	0.624	—	—	—
	TWO	1.000	0.900	0.856	—	—	50–60
	ZPG	1.000	1.033	1.040	—	—	(40–50)
Residual model, level of education an inverse function of dependency ratio weighted by relative school-year cost, initial $\Delta A = 1.015A$	TEMP	1.000	0.985	1.006	1.034	—	30
	PLUS-HALF	1.000	0.838	0.748	2.412	—	50–60
	TWO	1.000	0.897	0.975	—	—	40–50
	ZPG	1.000	1.044	0.981	0.395	—	(30–40)
Verdoorn model, otherwise same as line above $\Delta A = 1.015A$	TEMP	1.000	0.986	0.993	—	—	40–50
	PLUS-HALF	1.000	0.822	0.608	—	—	—
	TWO	1.000	0.863	0.757	—	—	—
	ZPG	1.000	1.082	1.075	—	—	(40–50)

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[*] In all runs, initial $Y/K = 3$, initial $S^K_{t=1} = (K_{t=1} - K_{t=0}) = .06Y_t$, and elasticity of saving $(e_s) = .50$. The results shown are per-worker incomes in other demographic structures as a proportion of Y/L in structure BASE in the same year.

[†] Dashes indicate that the values of the numerator or the denominator became very large, but that the trend observed in the last two entry years is continued.

[‡] Crossing years shown in parentheses indicate that the crossing was from above BASE to below BASE. Other crossings are from below to above.

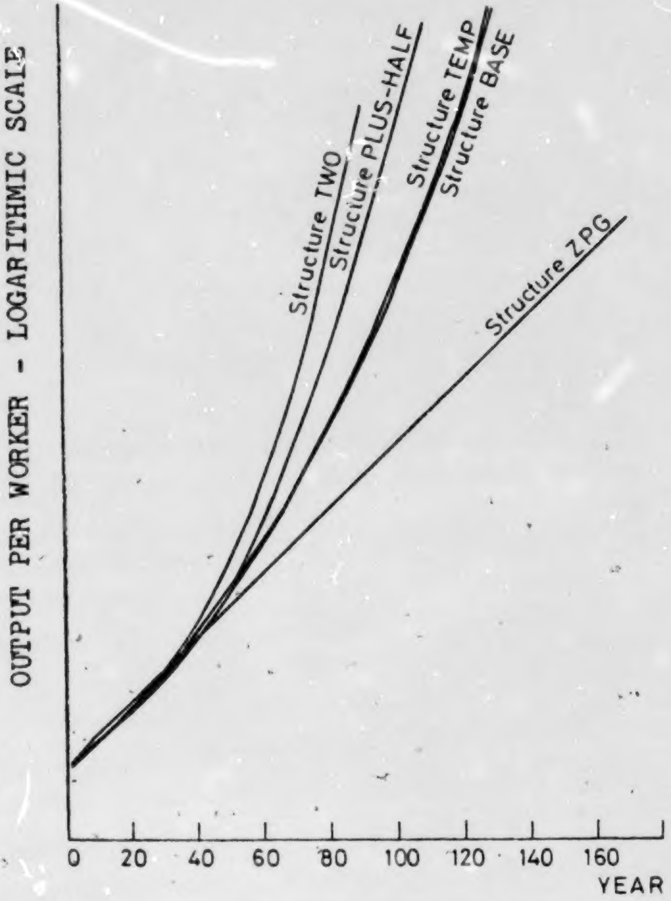

FIGURE 6–4 OUTPUT PER WORKER WITH VARIOUS RATES OF POPULATION GROWTH

3. With respect to the labor-force adjustment: The effect through the parents' labor supply of incremental children after the first child is quite insignificant, just as preliminary calculations had suggested it would be. In no case was the relationship between structures BASE and PLUS-HALF as much as a quarter of a percent different in year 160 between the runs that were and were not adjusted for the parents' labor-force effect.

4. The time required for Y/L in structures PLUS-HALF and TWO to overtake Y/L in structure BASE is generally longer in models where expenditures on education affect physical saving, even where education positively influences both EFF_t and A_t. But this is not invariably true, especially for structure TWO where the labor force always has a younger average age and hence *may* have a higher average education than in structure BASE, because of the secular growth in education.

Discussion of Results

1. Some may question the framework of this chapter on the grounds that the past rate of increase in knowledge, economies of scale, and productivity may not continue in the future. Perhaps. But even if so, this formulation should add to our understanding of the growth of population and per-worker income in the past history of the United States and Western Europe. And for at least a short period in the future, it does not seem unreasonable to project the long-term trend of the past. Further into the future we must bring other arguments to bear to help us decide whether the growth of productivity will be faster or slower than in the past. The same criticism may also be made about natural resources in the future, with the same response.

2. The physical capital-output ratio is falling over time in the United States due to the shift to tertiary activities and the discovery of better ways to make capital equipment. But on the other hand, the social cost of schooling will rise in the future. On balance, one does not know whether the social cost of an incremental labor-force entrant will fall or rise in the future relative to his earnings.

3. The difference in effects of population increase in LDC's and MDC's comes out sharply in this analysis. Productivity per worker does not grow much from year to year in many LDC's, and hence the effect of the feedback is correspondingly small. This implies that an increase in workers will not increase productivity per worker much in LDC's. This conclusion is made even stronger by the fact that a considerable portion of the increase in knowledge operative in LDC productivity increase occurs outside any LDC, and is rather independent of the size of the LDC work force.

4. The dependent variable in this model is output per worker *measured in conventional national-income terms*. If such amenities as space and purity of the environment that are a function of total population are negative and were included in the measurement, the results might be different. A calculation that includes them might show a lower "adjusted income" or welfare measure per person for a large population that would

otherwise have a higher income per person measured in conventional terms. If such disamenities are really substantial, the results of this chapter would be biased in favor of the larger population. But no convincing measurement of the over-all effect of population density has yet been developed. An authoritative recent survey of studies of such *partial* measures of welfare as longevity of life, crime rate, mental illness rates, recreational facilities, number of fires, ease of travel, and so on, concludes that higher population density is not the unalloyed evil it is commonly thought to be (Hawley, 1972). Different densities and different city sizes have different advantages and disadvantages.

A related matter is leisure, the amount and value of which can make an enormous difference in a measure of welfare. As income per person rises, people work fewer hours and enjoy more leisure (Kindleberger, 1865; Denison, 1967, Chapter 6; Nordhaus and Tobin, 1972). This implies that the gap between the outputs per worker yielded by any two demographic structures is smaller than otherwise shown, and the amount of time required for convergence or crossing would therefore be shorter. This would tend to reinforce the main point of this chapter—that even if faster population-growth structures start out behind in output per worker, they will catch up with and overtake lower population-growth structures.

5. No distinction has been made between market-induced and market-autonomous productivity increases for the following reasons: (1) The variation explained by economic incentives that induce innovation is much greater within a given industry than within a society as a whole; (2) The reward structure has more influence on whether an inventor works on airplanes instead of railroads than it does on whether he innovates or does not innovate at all, it would seem; (3) The incentives are endogenous, and hence are most easily treated as innards of the black box that is considered here only in its over-all shape and behavior.

6. The simulated models of the MDC sector discussed in this chapter are quite simple compared to the general model outlined in Chapter 2, and compared to the model for LDC's to be discussed in coming chapters. (This is why the MDC sector is treated in only four chapters whereas the LDC's require seven chapters.) The main simplifications are these: (1) The entire economy is viewed as a single industrial sector; (2) The effect of population growth is essentially a scale effect, including the increase in knowledge. Such scale effects do not require fundamental changes in people's behavior. For example, there are no changes in the trade-off of leisure for goods, or people becoming market oriented, or increasing control of fertility. This is *not* to say that there are no directly population-induced behavior changes in MDC's; such effects, both positive and negative, do indeed exist, for example, moving to less-crowded areas to avoid congestion, and the invention and development of the skyscraper. But

primarily the response to population growth in MDC's is "more of the same," rather than fundamental transformations to quite different behavior as occur in LDC's. Such transformations in LDC's are much more complex, and it is the absence of this complexity that enables the MDC model to be so streamlined.

7. Models such as those set forth in this chapter would have had absolutely no chance of being accepted by readers 10 or 20 years ago, because of the pre-eminence of physical capital in the thinking of economists. But with the recognition in recent years of the fundamental importance of knowledge, education and of the quality of the labor force in the productive process, models that allow for the effect of population growth on technology and human capital should not be uncongenial to readers.

8. Though this and the previous chapter deal only with MDC's, the reader may wonder whether MDC population growth has negative effects upon LDC's even when the effects of additional fertility are positive for the MDC's themselves. This question can be answered with an unequivocal "No." As discussed in Chapter 5, the effect through increased demand, use and prices of natural resources is clearly positive. (A person who sympathizes with the LDC's and doubts the value to them of trading their natural resources should ask himself if any LDC would be better off if the MDC's decided to buy no oil, coffee, and so forth from LDC's.) And the LDC's clearly should benefit from the additional knowledge and technological advance which higher population growth is bound to produce in MDC's.

9. The speed of the onset of the positive effect of an additional child is understated in the results because the impact of an additional child on the parents' work supply surely is much more positive than is shown in the model.

10. As you question the conclusions in this chapter, check with your intuition whether you think that the United States and other countries would be better off today if there had been half as many people in the United States in 1830 or 1880 or 1930 as there actually were. Our ancestors had positive effects upon us through the knowledge they created and the economies of scale they willed us, and if there were fewer of those ancestors the legacy would have been smaller. It is worth keeping this in mind when speculating about whether life today would be better if there were fewer people alive *today*.

But the MDC and LDC models go beyond "human capital" as a commodity that is essentially plastic and inert as is physical capital. These models really reflect the feedback of people *as people*, responding to their needs with physical and mental efforts up to and including the creative spark. Imagination and creativity are not concepts commonly found in economic models, nor are they ever above the surface here. But let us recognize their importance unself-consciously, and be willing to give them their due.

SUMMARY

Increases in productivity as a result of increased scale and of knowledge caused by increases in population were added to a simple classical model of an MDC, using two quite separate models. One model uses the residual to estimate the feedback from the labor-force size to productivity; the second model uses Verdoorn's law to estimate the feedback effect of total output on productivity.

Under assumptions about the parameters that I trust are reasonable, demographic structures with larger rates of population growth, after initially falling behind in per-capita income, usually overtake structures with lower rates of population growth in 30–80 years, and the shorter end of this period is implied by recent rates of change of productivity. That is, though an increment of population initially has a negative effect upon economic welfare, after some decades the effect has become positive. This outcome is a step toward quantifying Kuznets' reasoning about the role of people as creators of knowledge in modern growth.

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